



Imagestore HDTV

User Manual

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Software version 1.13.6

Miranda Technologies Ltd.

UK

Tel: +44 (0) 1491 820000

Fax: +44 (0) 1491 820001

Email: uksales@miranda.com

Web: www.miranda.com

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Preface

Warranty

Miranda Technologies Ltd offer a 24 months free parts and labour warranty on Oxtel Series equipment from the date of the initial invoice, providing there is no evidence of negligence, abuse or failure to reasonably follow instructions given by the Company for its proper use.

During the warranty period, Miranda Technologies Ltd will replace or repair at its cost, Oxtel Series equipment returned to the factory, carriage and duty paid and insured by the sender.

Before returning any item for warranty repair, a valid returns authorisation must be granted by Miranda Technologies Ltd.

All repaired goods will be delivered (as instructed) carriage and duty paid and insured by the sender.

Any warranty, over and above that offered here, is the responsibility of the local Miranda Sales Office or appointed Distributor.

Contact Information

For service, repair and warranty information and for returns authorisation contact:

oxtelsupport@miranda.com

Important Safety Notices

Injury Precautions

1. Use a proper power cable.

To avoid fire hazard, use only an appropriate power cable which complies with the following:



For mains connection use only a 10amp IEC inlet lead meeting EN60320 or equivalent.

Connection to the mains supply should be via a circuit breaker or by a mains plug which meets the relevant local standards in the country of installation.

2. Avoid electrical overload.

To avoid electric shock or fire hazard, do not apply a voltage to a terminal that is outside the range specified for that terminal.

3. Ground the product.

Imagestore HDTV is grounded through the grounding conductor of the power cable. To avoid electrical shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of Imagestore HDTV, ensure that the product is properly grounded.

4. Do not operate without the covers.

To avoid electrical shock or fire hazard, do not operate Imagestore HDTV with its covers removed.

5. Use an appropriate fuse.

To avoid fire hazard, use only the fuse type and rating specified for Imagestore HDTV.

6. Do not operate in wet/damp conditions.

To avoid electrical shock, do not operate Imagestore HDTV in wet or damp conditions.

7. Do not operate in an explosive atmosphere.

To avoid injury or fire hazard, do not operate Imagestore HDTV in an explosive atmosphere.

Product Damage Precautions**8. Provide proper ventilation.**

To prevent Imagestore HDTV overheating, provide proper ventilation.

9. Do not operate with suspected failures.

If you suspect there is damage to Imagestore HDTV, have it inspected by qualified service personnel.

Certifications and Compliances

Imagestore HDTV has CE approval and complies with the standards detailed in EN50082-1:1992 and BS EN 60950:1992 Amd 3.

Imagestore HDTV is fully Year 2000 millennium compliant.

Scope of the Manual

The manual includes all the information required to install, configure and operate Imagestore HDTV.

Serial automation control protocol used by Miranda Technologies Ltd mixers, keyers and still-store products is outside the scope of this manual. Details of this protocol and other related issues are found in the appropriate documents shown in the following list.

Associated Publications

Oxtel Series Automation Protocol	Part No. 01035
MCS User Manual	Part No. 01033
Textbuilder User Manual	Part No. 02735

Electronic copies of the manuals are available from the Miranda website at:

<http://www.miranda.com/library.en/Automation%20Protocol/>

and

<http://www.miranda.com/software.php>

Symbols and Conventions

Front panel control of Imagestore HDTV is achieved using four keys in conjunction with prompts from the display.



Where reference is made to a key the legend of the key will be shown in lowercase italics (*escape* or *enter*) or by the icons ◀ and ▶.

The two-line display provides a range of prompts in response to key presses. Where reference is made to an actual display prompt this will be shown italicised, e.g. *Operate* or *Mix A Input*.



These symbols denote 'Refer to documentation'.

Contacts

For technical assistance, please contact your nearest Miranda Technical Support centre:

Americas

Telephone (9:00am - 9:00pm EST)

+1-800-224-7882

techsupp@miranda.com

Asia

Telephone (9:30am - 5:30pm JST)

+81-3-5730-2987

asiatech@miranda.com

Europe, Middle East, Africa, UK

Telephone (10:00am - 7:00pm CET)

+44 (0) 1491 820222

eurotech@miranda.com

France (only)

Telephone (9:00am - 6:00pm CET)

Telephone: +33 (0) 1 55 86 87 88

francetech@miranda.com

www.miranda.com

Manual Structure

Overview

The overview provides an introduction to the Miranda Technologies Ltd Imagestore HDTV for new users and describes the functions and features offered by the product. It includes a simple technical concept of the unit and details the optional modules that are available to enhance the unit's capabilities.

Front Panel Operations

This section describes how to operate Imagestore HDTV using the front-panel controls. Each manual function, feature and parameter is fully described.

Oxtel HD RCP

This section describes how to operate Imagestore HDTV using the HD remote control panel. Each manual function, feature and parameter is fully described.

Audio Mix files

The mix file is used to specify sets of audio sources or inputs to be mixed together using certain rules and then assigning the result to a particular destination or output. This section explains the function and terminology of the mix file and how to create them.

Emergency Alert System

This section describes how to operate the Emergency Alert System.

Imagestore Intuition

This section describes how to configure the Imagestore for use with Intuition.

Installation

This section contains details of the unit interconnections and interfaces. It describes all the set-up procedures required for a successful installation including reference source selection, internal timing and synchronisation set-up.

Support

The support section describes the procedures for using the return-to-base warranty. It explains how to contact the Miranda Technologies Ltd technical support team and outlines a series of preliminary unit checks that should be made prior to calling.

Product Specification

This appendix provides a summary of the specifications of Imagestore HDTV.

Glossary

This appendix contains a guide to the terms and abbreviations found within this user guide.

Standard mixfiles

This section explains the operational differences implemented by each of the Miranda Technologies supplied Audio Mix files.

Software Update

Instructions on how to format a bootable floppy drive and to load the latest software.

Menu Tree

This appendix contains a listing of the current menu tree.

Index

This appendix provides blank pages that may be used to record useful unit configuration data.

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Overview

Introduction

This introduction provides a basic overview of the concept of the unit and includes instructions for getting started.

An extensive range of options and upgrades are available for Imagestore HDTV and this section describes the purpose and features of each enhancement. More detailed and specific information regarding operation, configuration, installation and support are provided in later sections.

Imagestore HDTV (Product code IS-HDTV) is part of Miranda Technologies Ltd's professional broadcast equipment range of products and its primary use is to insert logos into a HD-SDI digital video signal. The capabilities of this 2U unit include simple logo insertion, still and animated images.

Applications

Imagestore HDTV is typically used to insert a still or animated logo, channel identification, a programme schedule, an advertisement, an emergency image, or a combination of any two of those. Each of these resources may be brought *on-air* from the 40-image library (optionally 400, 1000 or 2000 image). Alternatively, external 'live' fill and key signals from a character generator, or a still/animation store, can be directly inserted into the HD signal.

Concept

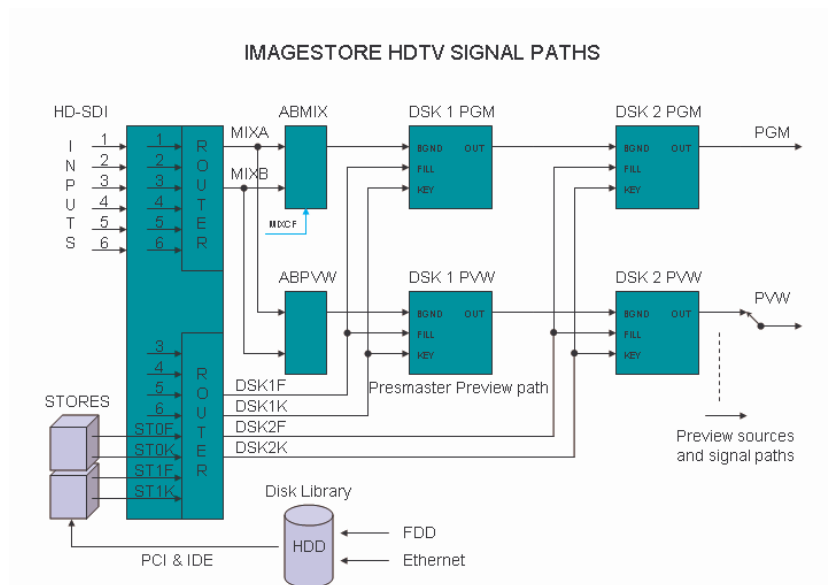
Imagestore HDTV is set up for operation where the two keyers are arranged in series as shown below. This configuration allows two images to be keyed simultaneously, but independently, over the background video.

A fail-safe mechanical Video Relay Bypass option (VRB-HD-001) is available that directly connects the background video source to the programme output in the event of a power supply problem.

Still (.oxt), animated and Easytext (.oxa) images are typically stored in the unit's hard disk library. Images may be added to the library using the floppy disk drive but the files must be in an appropriate format. Miranda Technologies Ltd's *Media Conversion Software* is designed for this purpose and is supplied with each Imagestore HDTV.

An Ethernet interface option (NET-HD-001) provides for the rapid loading of images and animations over either a co-axial or twisted pair network using MCS. This interface also enables the transference of images between a PC workstation and Imagestore using Miranda Technologies Ltd's Media Distribution System (MDS). The MDS software provides for transfer and management of still-images and animations. Files may also be transferred using an FTP program.

Block Diagram



Video Standards

Imagestore HDTV supports SMPTE 292M 1.485Gb/s at the following resolutions:

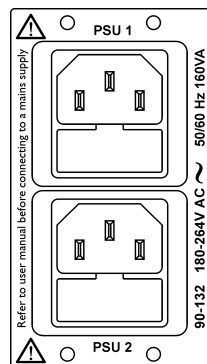
1920 x 1080i/59.94 Hz	SMPTE 274M 1998
1920 x 1080i/50 Hz	SMPTE 274M 1998
1280 x 720/59.94 Hz	SMPTE 296M 2001
1280 x 720/50 Hz	SMPTE 296M 2001

Standard	Words per active line (S/AL)	Active lines per frame	Frame rate (Hz)	Scanning format	Interface sampling frequency F_s (MHz)	Words per total line (S/TL)	Total lines per frame
SMPTE 274M							
1920 x 1080/59.94/2:1	1920	1080	30/1.001	2:1 interlace	74.25/1.001	2200	1125
1920 x 1080/50/2:1	1920	1080	25	2:1 interlace	74.25	2640	1125
SMPTE 296M							
1280 x 720/ 59.94	1280	720	60/1.001	1:1 Pro-gressive	74.25/1.001	1650	750
1280 x 720/ 50	1280	720	50	1:1 Pro-gressive	74.25	1980	750

Getting Started

Applying Power

Before applying power, ensure that the floppy disk drive does not contain a disk. Imagestore HDTV does not have a power on/off switch and power is applied immediately when the IEC plug is connected to mains power. The product should be connected to the mains via an appropriate circuit breaker. In the event the second PSU option (PSU-HD-001) is not fitted always connect to the IEC socket labelled PSU1 first.



Boot-Up Sequence

Once power is applied Imagestore HDTV will boot automatically and the complete process takes about 30 seconds. The unit first checks to see if there is a disk in the floppy drive and, if it finds one, it will attempt to boot from that disk. Miranda Technologies Ltd issues specialised floppy disks for use as part of the boot-up sequence when software upgrades are being implemented. No other disk should ever be present in the floppy disk drive during the boot sequence. The boot sequence is complete when the following top level "boot-up" menu appears on the front panel VFD display.



Facilities and Features

Image Loading and Distribution

The entry-level Imagestore HDTV provides storage for up to forty full-screen images with their associated keys and this can currently be upgraded to 400, 1000 or 2000 images. Each animated clip is counted as one single image stored in the library. With large or long duration animations (where the total pixel count of the animation exceeds one full-screen frame) the total number of full screen frames used counts towards the permitted maximum of full-screen images in the library.

Images (.oxt), animations and Easytest (.oxa) files saved to floppy disks from Miranda Technologies Ltd's Media Conversion Software - (or other Miranda Technologies Ltd units) can be loaded in the same way. The Media

Conversion software allows large animations and images to be saved across multiple floppy disks (span files .oxm), using loss-less compression to reduce the number of disks required.

Miranda Technologies Ltd also provides an image transfer and management system for Imagestore HDTV. The Media Distribution System(MDS) uses a local area network to connect the workstation to a number of Miranda Technologies Ltd's image and audio insertion products. Details of MDS are contained in a separate manual user guide.

Image Editing

The image editor permits an operator to position an image/animation (both horizontally and vertically), mask the image/animation and adjust the clip, gain and transparency levels prior to transmission.

Transmission

Once prepared, an image/animation can be saved in the image library and sent to air using fade and cut transitions.

Animated Images

Imagestore HDTV provides image animation, for applications such as moving logos, messages and emergency images. The image motion system provides storage and live playout for up to 40, (optionally 400, 1000 or 2000) full, or part-screen images of variable duration.

The maximum animation length is dependent upon both the screen-size of the images and the playout memory installed in the Imagestore HDTV.

There are two video stores, which may be used to hold text, stills or moving logos. The images may be any size up to full screen. Stored images and their associated keys are stored and processed at 10 bit resolution. (Unless the image is stored without key to save space in which case it is stored at 8 bit resolution.)

The time for larger animations, up to full screen, are reduced proportionally to the area used. Areas are evaluated each frame so bugs may change in size with no penalty.

With 256MB of playout memory, a logo of $\frac{1}{64}$ screen size can be animated for just over a minute. Larger screen sizes or smaller playout memory sizes affect the maximum animation time pro rata.

				Memory option			
				64	128	256	512
HDTV Standard	Rate	Frame rate	MB / frame	Max no. of frames			
1080i	59.94	29.97	7.91	8.0	16.1	32.2	64.4
		Duration (s)	1/16 th frame >	4.3s	8.6s	17.2s	34.4s
			1/64 th frame >	17.0s	34.3s	68.8s	137.6s

Moving images are constructed from component images using the animation builder software provided as part of the Media Conversion Software package supplied with Imagestore HDTV.

Component images are imported into the animation builder utility from 32-bit Targa image files thus allowing components to originate from almost any computer graphics system.

AB Mixer

The optional integral AB Mixer (MIX-HD-001) video switcher is designed to be fed by any of the unit’s input sources or by an external router under automation control. The mixer provides cut, cross and V fade transitions with variable fade rates.

Timing, Control and Automation

Imagestore is designed to be easy to install. One line FIFO’s are provided on each input for simplified system timing.

Other valuable set-up and control features include a menu-driven front panel VFD display, a General Purpose Interface (GPI) macro editor and a facility to load configuration settings from, and save system configurations to, a floppy disk.

Imagestore HDTV is highly suited to automated broadcast environments and remote control options include RS422/RS232, as well as GPI and analogue fader inputs.

Mechanical Bypass

In the event of power loss to the Imagestore HDTV, or failure of an internal power supply, the mechanical video relay bypass option (VRB-HD-001) routes the serial digital “background signal” directly to the programme output. This feature is an emergency failsafe and is completely non-synchronous in operation. During *boot-up*, the bypass is maintained until Imagestore HDTV is fully operational.

Emergency Alert System

Imagestore HDTV supports Emergency Alert Systems providing the relevant licence is installed.

The 2 EAS models supported are:

- ◆ Sage ENDEC Model 1822
- ◆ TFT EAS 911T

To configure a communication port to accept the EAS data stream refer to the *Serial Comms Setup* section on page 138.

Dual 2D DVE

IP2-HD-2DVE is a dual-channel 2D DVE option capable of digital video effects on both the A and B input video streams, making it ideal for picture-in-picture applications such as *over the shoulder* news transitions, as well as squeezes for credits, news flashes, sports results and schedules.

Clock Insertion

The *Bugclock* option allows Imagestore HDTV to insert customised in-vision clocks. A wide range of clocks and timers can be generated, with hour, minute and second indications. Fully customised clocks can be produced offline using the Clock Builder (part of the MCS Media Conversion software package). Bugclock can be locked to station LTC or VITC timecode. Clocks

are loaded, previewed, positioned and keyed in the same way as animations and static logos.

Bugclock images behave like all other images with respect to positioning, transparency and masking controls. Previewing behaviour is the same as with other clips and images and will show the clock running where appropriate. All existing GPI and automation commands, that apply to still images and animations, function identically for clocks.

Bugclocks like other images use a single keying layer. This means that a clock can be previewed while a different clock is shown on programme.

Embedded Digital Audio Mixer

The optional Easysound digital audio mixer (ES-HD-8) can be fitted within Imagestore HDTV and is designed to add voice-overs, jingles and other audio inserts over a programme soundtrack at transmission. Easysound can also accept audio from AES/EBU sources, as well as embedded audio from the Imagestore's background video input. The four mixes are available on AES/EBU outputs and can also be re-embedded into the SDI programme output.

Digital Audio Storage

Easyplay (EP-HD-001) is the digital audio storage and playout option for Imagestore HDTV. With Easyplay, broadcasters can associate sounds to image files, creating a whole new range of possibilities for musical logos and sound enhanced captions. Easyplay requires the Easysound option to be fitted to Imagestore HDTV and the system may be networked with the Media Distribution System.

Options

Status information regarding the options included with each Imagestore HDTV can be accessed from the front panel display, using the panel control keys as described later in this guide.

The following table lists the options with their identifying codes and briefly describes the purpose.

Option	Description
MEM-HD-400V	Image Library expansion to 400 frames with 2 x 128MB playout memory.
MEM-HD-1000V	Image Library expansion to 1000 frames with 2 x 256MB playout memory.
MEM-HD-2000v	Image Library expansion to 2000 frames with 2 x 512MB playout memory.
MIX-HD-001	A/B video mixer
IP2-HD-001	2 video input option. Replaces standard single input board. Note a maximum of 3 IP2-HD-001 boards can be fitted.
IP2-HD-2DVE	2 channel DVE board. Replaces standard input board
VRB-HD-001	Mechanical Video Relay Bypass
PSU-HD-001	Dual power supply option
NET-HD-001	10/100MB Ethernet interface RJ45
MDS-002-HD	Media Distribution System (requires NET-002 Option).
EAS-HD-001	Emergency Alert System support
ET-HD-001	Easytext automated character generator
BCK-HD-001	On screen analogue and digital clocks
ES-HD-8	Digital Audio mixer board with 32 channels (16 stereo pairs) AES I/O processing
EP-HD-001	Digital Audio storage and playout option
ES-HD-EMBED1-8	Audio embedding / de-embedding on channels 1-8
ES-HD-EMBED9-19	Audio embedding / de-embedding on channels 9-16
LOGO-HD	Imagestore Logo Inserter only

Checking Installed Options

The Imagestore HDTV can display the internal options installed from the front panel display.

Front Panel Display

From the opening screen press the right arrow key ► to display *Setup* then press the **enter** key to display the *Setup* menu.

Press the right arrow key ► until *View Licenses* appears on the second line of the display then press the **enter** key. Repeatedly pressing the ► key will now cycle the display through a list of the fitted options. When completed, press the **escape** key a few times until the *boot-up* menu reappears.

License Code	Option
AB Mixer	A/B video mixer
Ethernet	10/100 Ethernet Interface
Image Lib:40	40 Image library (2 x 64MB)
Image Lib:400	400 Image library (2 x 128MB)
Image Lib:1000	1000 Image library (2 x 256MB)
Image Lib:2000	2000 Image library (2 x 512MB)
Emergency Alert	Emergency Alert System
Easytext	Easytext Character Gen.
Dual 2D DVE	2 channel DVE
Easysound	Digital Audio Mixer
Easyplay	Digital Audio storage and playout
Audio Lib:40	40 Audio Image library
Audio Lib:400	400 Audio Image library
Audio Lib:1000	1000 Audio Image library
Audio Lib:2000	2000 Audio Image library
Audio Embed:2	Audio Embedding on channels 1-8
Audio Embed:4	Audio Embedding on channels 1-16

Front Panel Operations

This section of the manual explains, on a task-by-task basis, the operation of an Imagestore HDTV using only the front panel controls. Each task is fully detailed, making reference to other sections unnecessary.

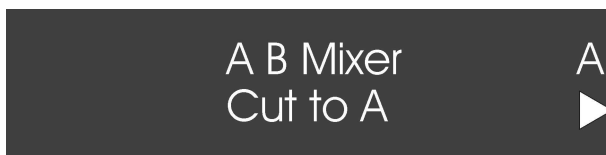
Controls

All of Imagestore HDTV's operational and configuration features can be monitored and controlled from the front panel of the unit using the pushbuttons and display. A simple menu-driven procedure provides access to the operational, configuration and set-up options.

The front panel of Imagestore HDTV contains a 3½ floppy disk drive, four push-button control keys and a vacuum fluorescent display (VFD). Local control of the unit is "menu driven" using a combination of the push-button keys together with options displayed on the VFD. The upper key of the group is identified on the panel as the *escape* key and the bottom key is identified as the *enter* key. Left and right keys ◀ ▶ are used to move a cursor left and right accordingly to select menu options.

VFD Display

The alphanumeric VFD display is divided into two separate lines. The upper row of characters indicating the function and the lower row indicating the current selection and any optional configuration changes that are available.



Where there are more options available than there is room for on the display, the symbols ◀ and ▶ are used to indicate that other options exist to the left

and right respectively. Using the appropriate arrow key will reveal those options.

If an option is not licenced, e.g. Dual 2D DVE, it will not be displayed on the front panel menu.

VFD tallies

To highlight the state of either the AB Mixer (video/audio) or the keyers, additional symbols are shown on the top line of the VFD display at the right hand edge. These symbols represent:

A	source A
B	source B
-	intermediate state, transition being processed.
↑	image/voice-over keyed up (to air)
↓	image/voice-over keyed down (from air)
B	Fade to Black
S	Fade to Silent

Escape and Enter Keys

The *escape* key is used to proceed to a menu option closer to the *boot-up* menu. Successive pressing of the key will bring the display to the start-up menu. The *enter* key is used to accept the menu item currently shown as selected by being enclosed in brackets.

Left and Right Arrow Keys (◀ ▶)

Left and right arrow keys ◀ ▶ may be used to index left and right respectively along a displayed menu branch to select a function. When a selection of parameters is offered, these keys may be used to select a variable. Where a single value is displayed the left arrow key may be used to reduce the displayed value and the right key may be used to increase it.

Opening screen



The Imagestore HDTV menu has two branches:

Operate

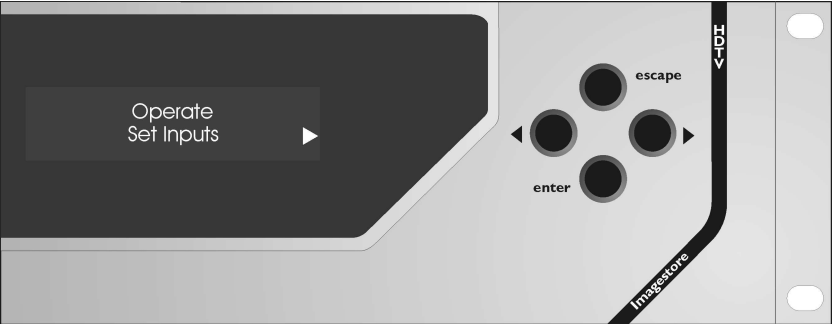
Setup

From the opening screen with *Operate* displayed press the *enter* key.

Operate

Set Inputs

Select *Operate*, *Set Inputs*.



Set Inputs menu tree

Operate		
Set Inputs		
1/A	Pass SDI	
	Force Colour Field	RGB 0 <> 100%
2/B	Pass SDI	
	Force Colour Field	RGB 0 <> 100%
3/Fill-1	Pass SDI	
	Force Colour Field	RGB 0 <> 100%
4/Key-1	Pass SDI	
	Force Colour Field	RGB 0 <> 100%
5/Fill-2	Pass SDI	
	Force Colour Field	RGB 0 <> 100%

6/Key-2

Pass SDI

Force Colour Field

RGB 0 <> 100%

The factory default setting for each input is to Pass-SDI. If the input is unused/unconnected it can be set to internally generate a colour field.

Using the front panel control keys (◀ ▶ *enter*) select the input you wish to modify. To adjust the colour field select **Force Colour Field** then press the *enter* key.

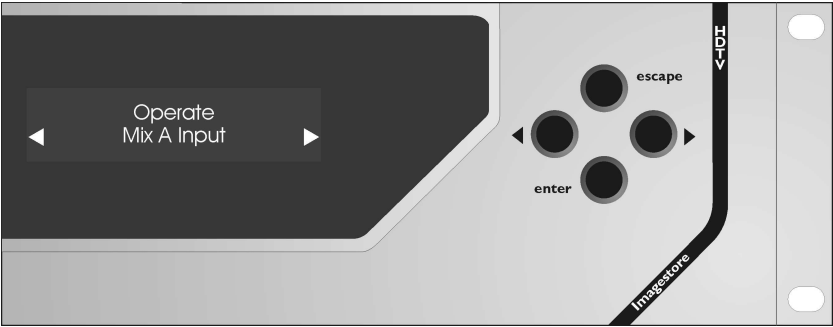
The colour field is set by adjusting the RGB (Red, Green, Blue) values, from 0% to 100%, for each colour in turn. Using the arrow keys ◀ ▶, increase or decrease the field value then, when the desired value is reached press the *enter* key. After adjusting the Red value the Green field will be displayed then the Blue. Pressing the *enter* key after adjusting the Blue value will accept the change. To go back a level press *escape* key.

Standard Colours

Colour	Red (%)	Green (%)	Blue (%)
White	100	100	100
Yellow	100	100	0
Cyan	0	100	100
Green	0	100	0
Magenta	100	0	100
Red	100	0	0
Blue	0	0	100
Black	0	0	0

Mix A Input

Select *Operate*, *Mix A Input*.

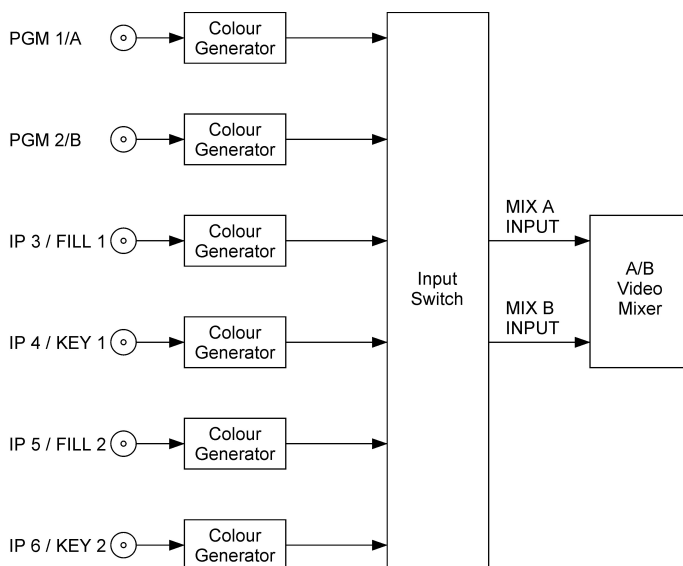


Mix A Input menu tree

Operate
Mix A Input
1/A
2/B
3/Fill-1
4/Key-1
5/Fill-2
6/Key-2

This option is used to select the SDI source that will become the Mix A Input for the AB Video mixer.

A maximum of 3 inputs cards may be fitted to the Imagestore HDTV allowing selection from up to 6 inputs. The illustration below shows the maximum configuration.

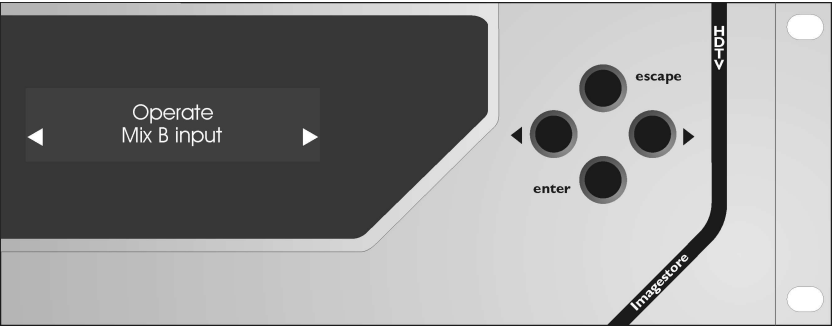


Using the front panel control keys (◀ ▶) display the input source you wish to select then press the *enter* key.

To go back a level press *escape* key.

Mix B Input

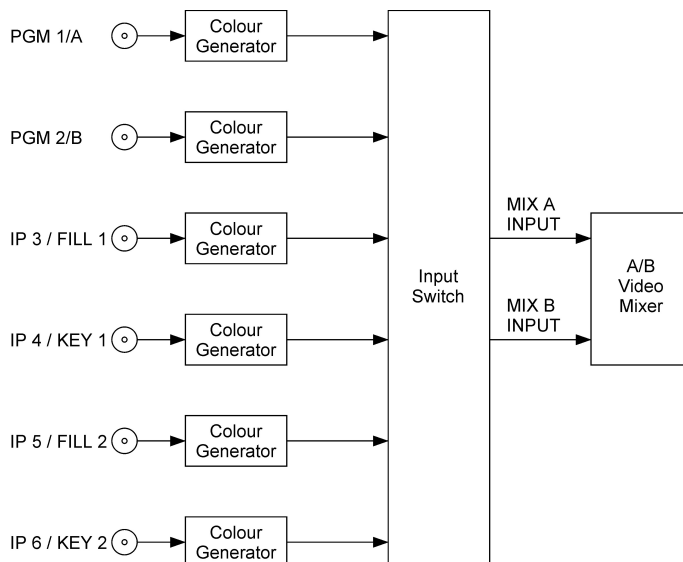
Select *Operate*, *Mix B Input*.



Mix B Input menu tree

Operate
Mix B Input
1/A
2/B
3/Fill-1
4/Key-1
5/Fill-2
6/Key-2

This option is used to select the SDI source that will become the Mix B Input for the A/B Video mixer.



Using the front panel control keys (◀ ▶) display the input source you wish to select then press the *enter* key.

To go back a level press *escape* key.

Note This menu is only available if the AB Mixer option is installed.

AB Mixer

Select *Operate*, *AB Mixer*.

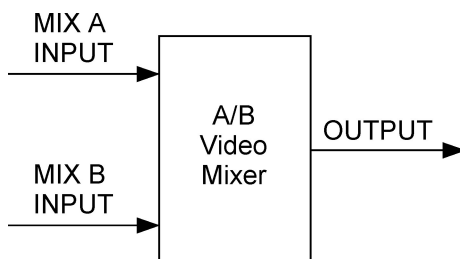


AB Mixer menu tree

```
Operate
  AB Mixer
    Cut AB
    Cut To A
    Cut To B
    Fade AB
    Fade To A
    Fade To B
    Transition Type
      X Fade
      V Fade
    Mix Rate
      Fields 1 to 999
    V-Fade Colour
      RGB 0 <> 100%
    Set Cut Mode
      Any Field
      Field 1 (Def)
      Field 2
    Set Fade Mode
```

Any Field (Def) Field 1 Field 2

The AB Mixer is an integral 2 input video switcher, which provides the background video source to the program keyers. The mixer can be configured for both cut and variable fade transitions from this menu. Using the front panel control keys (◀ ▶) display the transition type you wish to select then press the *enter* key.

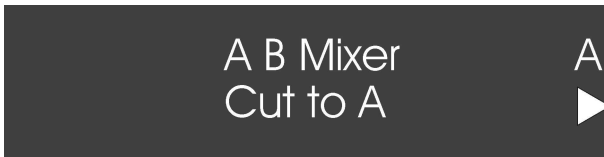


Note Pressing the <i>enter</i> key will activate the transition.
--

A **CUT** transition is an instant switch to the selected source. This is achieved between frames in the vertical interval so the active picture is allowed to finish before the new data is transmitted.

A **FADE** transition is the gradual process of switching to the selected source with rates adjustable between 1 and 999 fields (16.65 seconds @ 60Hz)

The front panel display will identify the background video source. Either A or B will appear on the top line of the display depending on which is active.



The options are:

Cut AB

Switches between the Mix A input and the Mix B input.

Cut To A

Selects the Mix A Input as the background video source.

Cut To B

Selects the Mix B Input as the background video source.

Fade AB

Fades between the Mix A input and the Mix B input. The rate, in fields, is set by the Mix Rate command.

Fade To A

Fades in the Mix A Input as the background video source. The rate, in fields, is set by the Mix Rate command.

Fade To B

Fades in the Mix B Input as the background video source. The rate, in fields, is set by the Mix Rate command.

Transition Type.

Use this option to select the transition type, X Fade or V Fade.

Mix Rate.

Use this option to select the number of fields to action a Fade. Using the arrow control keys ◀ ▶ adjust the value between 1 – 999 fields. Press the *enter* key to accept the value.

Note At 1080i/59.94 60 fields = 1 second.

V-Fade Colour.

This option determines the colour used when performing a V-Fade transition. The colour is set by adjusting the RGB (Red, Green, Blue) values, from 0% to 100%, for each colour in turn. Using the arrow keys ◀ ▶, increase or decrease the field value then, when the desired value is reached press the *enter* key. After adjusting the Red value the Green field will be displayed then the Blue. Pressing the *enter* key after adjusting the Blue value will accept the change. To go back a level press *escape* key.

Standard Colours

Colour	Red (%)	Green (%)	Blue (%)
White	100	100	100
Yellow	100	100	0
Cyan	0	100	100
Green	0	100	0
Magenta	100	0	100
Red	100	0	0
Blue	0	0	100
Black	0	0	0

Note The default colour is black.

Set Cut Mode

This option allows the user to determine exactly when cuts occur within a frame. This allows the cut behaviour of the Imagestore to be synchronised with external automation. The options are as follows:

- Cuts occur on any field
- Cuts occur on field 1 (default)
- Cuts occur on field 2

Set Fade Mode

This option allows the user to determine exactly when fades begin within a frame. This allows the start of fade behaviour of the Imagestore to be synchronised with external automation. The options are as follows:

- Cuts occur on any field (default)
- Cuts occur on field 1
- Cuts occur on field 2

Dual 2D DVE

Select *Operate, Dual 2D DVE*.



Dual 2D DVE menu tree

Operate

Dual 2D DVE

Play Forward

Play Backward

Select Sequence

DVE Mode

Bypass

None (Delay)

A B over DSK 1

A B Mixer

IP2-HD-2DVE is a dual-channel 2D DVE option capable of digital video effects on both the A and B input video streams, making it ideal for picture-in-picture applications such as *over the shoulder* news transitions, as well as squeezes for credits, news flashes, sports results and schedules.

Using the DVE editor software up to 100 sequences can be loaded onto the Imagestore HDTV for later playback. The DVE editor software and manual is supplied on the MCS CD.

Note! The Dual 2D DVE mode can only be licensed if the AB Mixer option is installed.

Play Forward

Plays the selected DVE sequence.

Play Backward

Plays the selected DVE sequence in reverse.

Select Sequence

Using the arrow control keys ◀ ▶ select the appropriate DVE sequence between 0 – 99. Press the *enter* key to accept the value.

Video and embedded audio delay through the DVEs

The DVE delay is exactly 2 interlaced fields or 2 progressive frames. For 59.94Hz standards the delay is $2/59.94$ s and for 50Hz standards the delay is $2/50$ s.

The embedded data in the DVE input stream is also delayed by the card whilst the video is resized. These delays are on the A and B input paths of the DVE card.

If the DVE is not required for that channel it can be completely taken out of circuit by setting the DVE mode to bypass. This will remove the delay completely.

DVE Mode

4 DVE modes can be selected altering the video path within the system.

Bypass

DVE mode out of circuit (bypassed) therefore no video frame delay added.

None (Delay)

DVE mode in circuit but inactive. Video frame delay added.

A B over DSK1

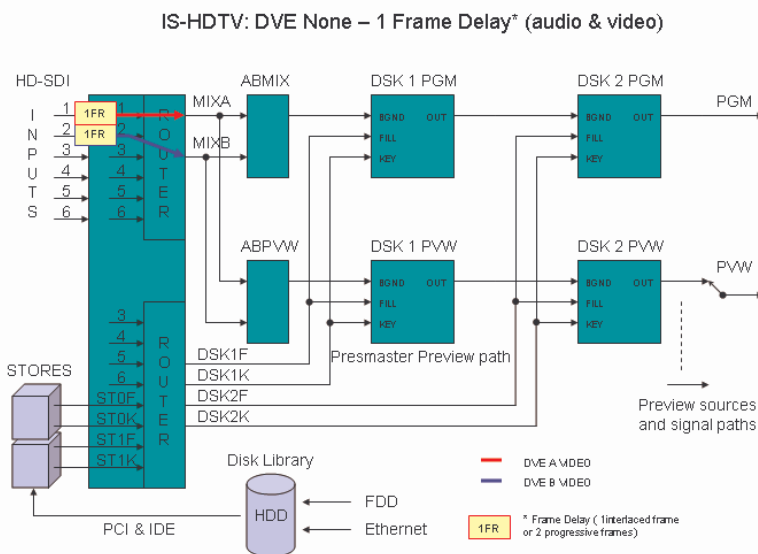
DVE mode in circuit and active. Video frame delay added.

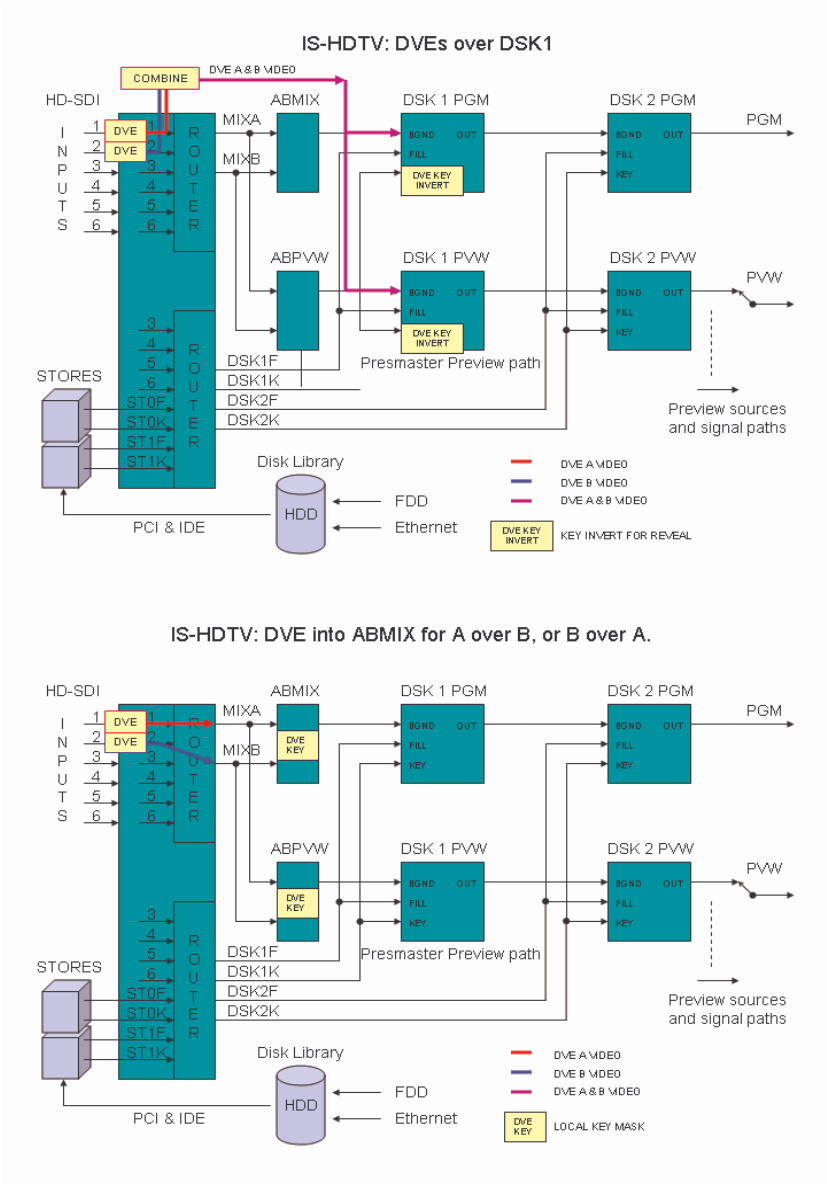
DVE to reveal DSK1 fill, from store or fill input.

AB Mixer

DVE mode in circuit and active. Video frame delay added.

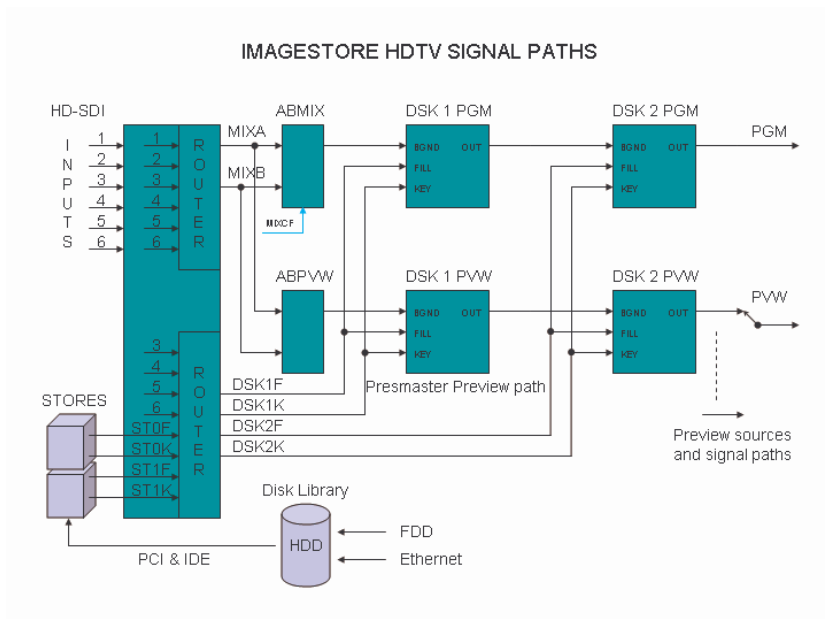
Mode diagrams





DSK 1 (Midground¹)

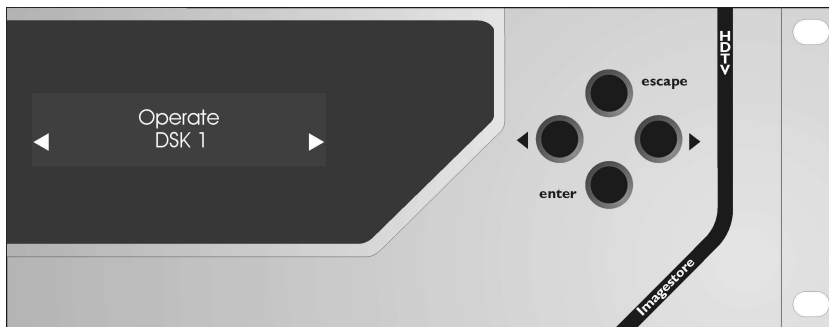
Imagestore HDTV has 2 downstream keying layers (DSKs) per channel, program and preview. The output from the AB Mixer forms the background video image on the program keys, which can also accept a Fill and Key signal from either, inputs 3-6 or from the stores, as shown in the diagram below.



The following section describes how to control layer DSK 1

Select *Operate, DSK 1*.

¹ DSK 1 was labelled “Layer 0” in software versions before 1.07



DSK 1 menus are split into 3 sub-headings:

- ◆ Keyer Operations
- ◆ Input Operations
- ◆ Store Operations

Keyer Operations

Select *Operate, DSK 1, Keyer Operations*.



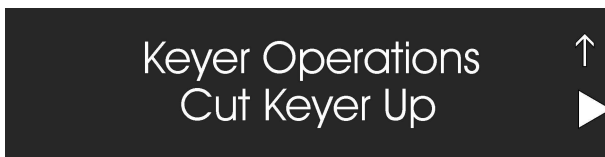
Keyer Operations menu tree

```
Operate
  DSK 1
    Keyer Operations
      Cut Keyer Up/Down
      Cut Keyer Up
      Cut Keyer Down
      Fade Keyer Up/Down
      Fade Keyer Up
      Fade Keyer Down
      Fade Rate
        (Value in fields 1 to 999)
      Set Key Parameters
        Source
          Self
          Separate
          None
        Type
          Full
          Linear
        Sense
          Normal
          Invert
      Clip, Gain & Trans
        Clip (Value 0 to 1023)
        Gain (Value 0 to 1023)
        Trans (Value 0 to 512)
      Cut To/From Black
      Cut From Black
      Cut To Black
      Fade To/From Black
      Fade From Black
      Fade To Black
      FTB Rate
        (Value in fields 1 to 999)
```

A **CUT** transition is an instant switch to the selected source. This is achieved between frames in the vertical interval so the active picture is allowed to finish before the new data is transmitted.

A **FADE** transition is the gradual process of switching to the selected source with rates adjustable between 1 and 999 fields (16.65 seconds @ 60Hz)

Symbols will appear on the top line of the VFD display indicating the status of the keyer.



↑	image keyed up (to air)
↓	image keyed down (from air)
-	intermediate state, transition being processed.
B	Fade to Black

Cut Keyer Up/Down

Switches on (up) or off (down) the fill/key input source of DSK 1 over the background video.

Cut Keyer Up

Displays the fill/key input source of DSK 1 over the background video.

Cut Keyer Down

Removes the fill/key input source of DSK 1 from being displayed over the background video. The background video is passed unchanged.

Fade Keyer Up/Down

Gradually switches on (up) or off (down) the fill/key input source of DSK 1 over the background video. The rate in fields is set by the Fade Rate command.

Fade Keyer Up

Gradually displays the key input source of DSK 1 over the background video. The rate in fields is set by the Fade Rate command.

Fade Keyer Down

Gradually removes the displayed key input source of DSK 1 from the background video. The rate, in fields, is set by the Fade Rate command.

Fade Rate

The Fade Rate is adjusted using the arrow control keys ◀ ▶ between 1 and 999 fields. Press the *enter* key to accept the value.

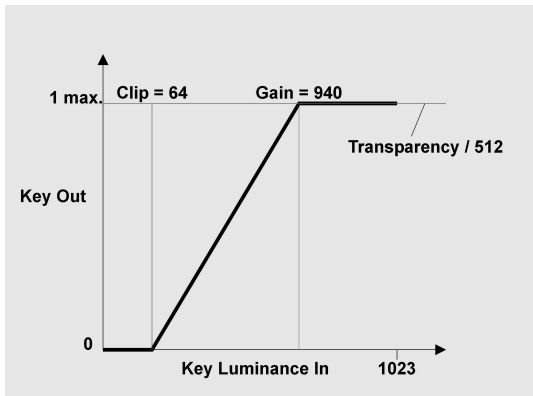
Note At 1080i/59.94 60 fields = 1 second.
--

Set Key Parameters

Keying is the process of inserting one video signal (referred to as the Fill signal) into another video signal (referred to as the Background signal) according to a third signal (referred to as the Key signal). There are two separate processes to consider

- ◆ Generating the Key signal
- ◆ Using the Key signal

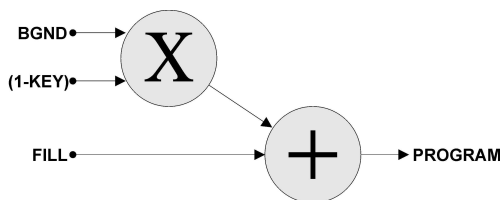
Oxтел series products implement keying where the Key is contained in the luminance content of the SDI signal. The Key source is selected from either the Fill input (known as Self Key) or a separate Key signal. Once selected, the Key signal is processed with Clip, Gain and Transparency to alter the mapping function between Key input luminance to Key output values. Transparency modifies the maximum key value in the range 0 to 1.



Once generated, the Key signal controls the combining of the Background and Fill video signals. Oxtel series products support both Linear and Full keying.

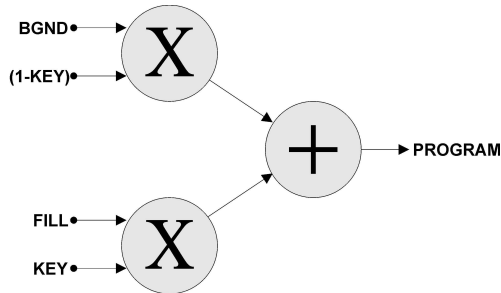
Key invert replaces the Key output with 1-Key, thereby inverting the action of the Key.

Linear keying is used where the Fill signal has been pre-computed to match the Key signal.



An example of this is where the output of a signal generator requires high quality keying. If a Full key was used it may cause a darkened border around characters where the character edge on the Fill signal correlates with the character edge on the Key signal and the resultant Fill signal after multiplication would be parabolic.

Full keying is where the Fill signal is multiplied by the derived key signal prior to being added to the modified Background signal.



Source

Self key When the *source* option is set to *self*, the key data is derived from the luminance content (Y value) of the "Fill" signal itself.

Separate key When the *source* option is set to *separate*, the key data is derived from the luminance content (Y value) of the separate "Key" image.

None When the *source* option is set to *none* the key for an image is set to white so that there is no image transparency.

Type

Full Key is where the foreground image is passed only where the key signal is present.

Linear Key is where the background and foreground are summed and the foreground is unaffected by the key.

Sense

Normal, a black-level key signal that will cause the "Fill" image to be fully transparent and not appear over a background. A white-level key signal will cause the "Fill" image to be opaque with no background appearing through. Intermediate keying levels will produce a pro-rata transparency effect.

Invert reverses this effect and white-level key signals now create a fully transparent "Fill" image with black-level signals producing an opaque "Fill" image.

Clip, Gain & Trans

Clip

Clip is the level under which the key signal will be forced to black. In a keying process this will result in a total absence of fill video in areas where the incoming key signal is less than the clip level.

Gain

The gain level amplifies the key signal, forcing grey levels towards and up to white. In a keying process this will result in the fill signal being less transparent than it otherwise would be in areas with a grey key signal.

Transparency

Transparency controls the luminance content (grey scale value) of the key signal and therefore the amount of background video that will 'seep' through the keyed image.

Typical CGT Values

For optimum results set the CGT values to the following:

◆ Clip	64	(Black level)
◆ Gain	940	(Peak White)
◆ Transparency	512	(Fully opaque)

Clip and Gain values are in the range of 0 (black) - 1023 (white), Transparency is in the range of 0 (clear) - 512 (opaque), and can be adjusted using the arrow control keys ◀ ▶.

Cut To/From Black

Switches the output from DSK 1 between black and background video, plus fill and key signals.

Cut From Black

Switches the output from DSK 1 from black to background video plus fill and key signals.

Cut To Black

Switches the output from DSK 1 from background video to black.

Fade To/From Black

Gradually changes the output from DSK 1 between black and background video plus fill and key signals. The rate in fields is set by the FTB Rate command.

Fade From Black

Gradually changes the output from DSK 1 from black to background video plus fill and key signals. The rate in fields is set by the FTB Rate command.

Fade To Black

Gradually changes the output from DSK 1 to go black. The rate in fields is set by the FTB Rate command.

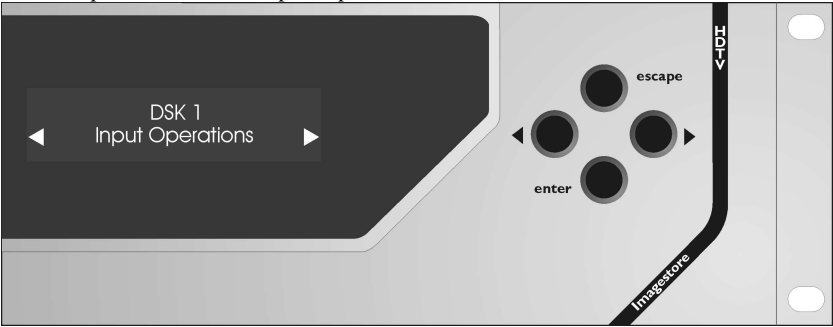
FTB Rate

The Fade to Black rate is adjusted using the arrow control keys ◀ ▶ between 1 and 999 fields. Press the *enter* key to accept the value.

Note At 1080i/59.94 60 fields = 1 second.

Input Operations

Select *Operate*, *DSK 1*, *Input Operations*.



Input Operations menu tree

Operate
DSK 1
Input Operations
Fill-1/Key-1
Fill-2/Key-2
Unload Input

Fill-1(2)/Key-1(2)

Sets the fill/key input source for DSK1 to Fill-1/Key-1 or Fill-2/Key-2.

Note! The 4 or 6 video input options IP4 HD 001 / IP6 HD 001 must be fitted.

Unload Input

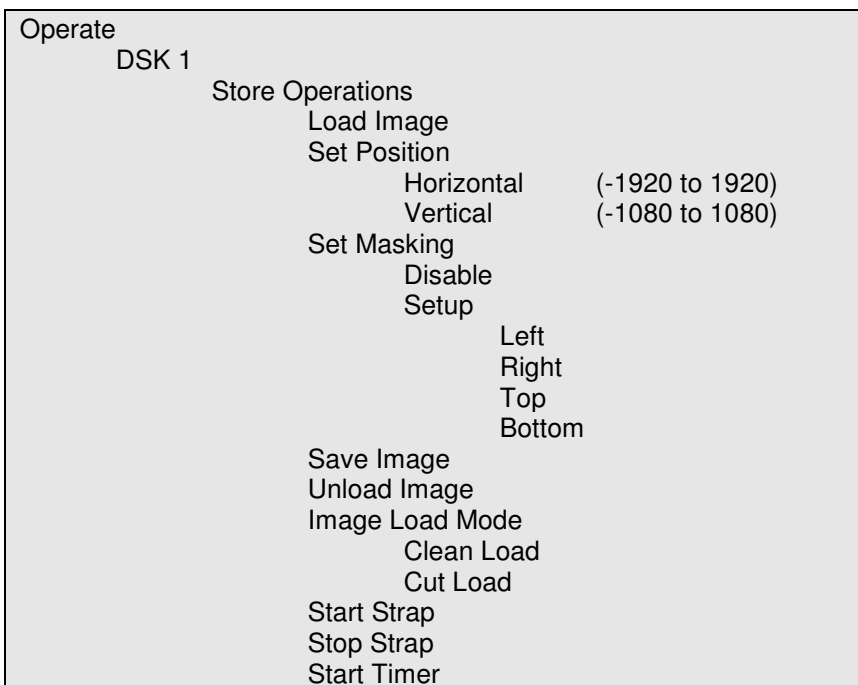
Unloads the input.

Store Operations

Select *Operate*, *DSK 1*, *Store Operations*.



Store Operations menu tree



Stop Timer Reset Timer Play Animation Restart Animation Stop Animation Stop Anim Instant

Load Image

Selects a file from the image library to load into Store 0.

Still images (.oxt).

Animations (.oxa)

Easytext (.oxa)

Bugclock (.oxa)

Easytext and Bugclock both require licenses.

Set Position

Determines the on screen position of the image.

Horizontal

Use the arrow control keys ◀ ▶ to adjust the value between -1920 and 1920.
Position 0 is the top left hand corner of the screen.

Vertical

Use the arrow control keys ◀ ▶ to adjust the value between -1080 and 1080.
Position 0 is the top left hand corner of the screen.

Set Masking

Defines a mask area for the loaded image. The number range is determined by the width and height of the image in pixels, -1. To maintain correct YUV values the pixel count will increment in units of 2.

Disable

Ignores the Set Masking values.

Setup

Sets the Masking values.

Left

Use the arrow control keys ◀ ▶ to adjust the value. Press *enter* to accept or *escape* to cancel.

Right

Use the arrow control keys ◀ ▶ to adjust the value. Press *enter* to accept or *escape* to cancel.

Top

Use the arrow control keys ◀ ▶ to adjust the value. Press *enter* to accept or *escape* to cancel.

Bottom

Use the arrow control keys ◀ ▶ to adjust the value. Press *enter* to accept or *escape* to cancel.

Save Image

Saves the loaded image to the image library including any masking values set.

Unload Image

Unloads the image from DSK 1.

Image Load Mode

Defines how the image is loaded into DSK 1.

Clean Load

Clean load removes the existing image from the store before loading the new file. The image/animation will NOT be displayed until it is fully loaded.

Cut Load

Cut load is similar to Clean Load but the existing image remains active until the new file is loaded. A cut transition then replaces the new image for the

old one. **Warning:** Loading a new image will fail, in this mode, if the sum of the resident image/animation and the new image/animation exceeds the image memory capacity. Use Clean Load mode when using such large animations.

Start Strap

Starts a loaded Easytext file.

Stop Strap

Stops a loaded Easytext file. The images (text) will freeze on screen.

Start Timer

Starts a loaded Bugclock timer.

Stop Timer

Stops a loaded Bugclock timer.

Reset Timer

Resets a loaded Bugclock timer.

The following commands are used to control an animation once it has been loaded into the keyer and cut up.

Play Animation

Starts the animation from where it was stopped using the *Stop Anim Instant* function.

Restart Animation

Restarts the animation from the beginning of the sequence.

Stop Animation

Stops the animation at the end of the sequence.

Stop Anim Instant

Stops the animation instantly.

DSK 2 (Foreground²)

Select *Operate*, DSK 2.



The commands for DSK 2 are identical to DSK 1.

- ◆ Keyer Operations
- ◆ Input Operations
- ◆ Store Operations

² DSK 2 was labelled “Layer 1” in software versions before 1.07

Preview Select

Select *Operate*, *Preview Select*.



Preview Select menu tree

Operate

Preview Select

Presmaster Preview

Program o/p

1/A

2/B

3/Fill-1

4/Key-1

5/Fill-2

6/Key-2

DSK 1 Fill o/p

DSK 2 Fill o/p

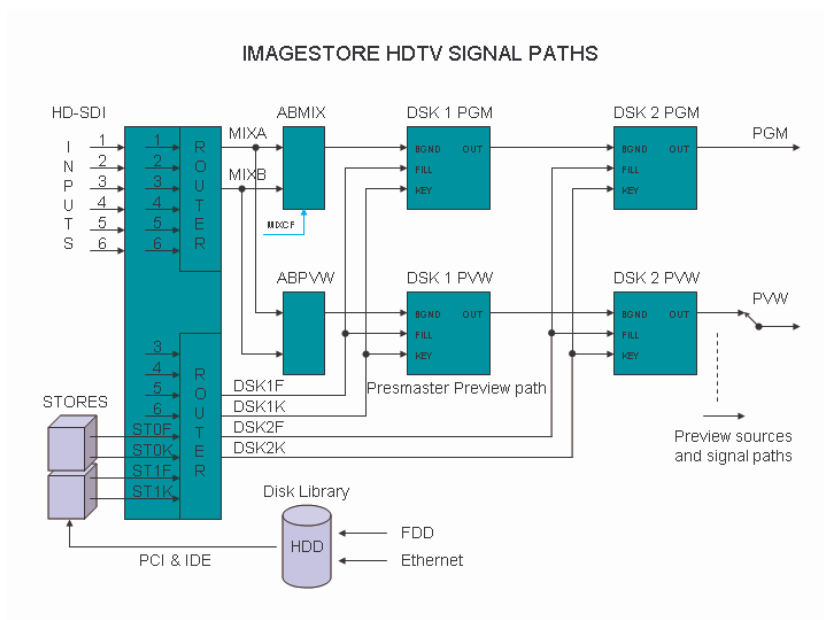
AB Mixer o/p

DSK 1 o/p

DSK 1 Key o/p

DSK 2 Key o/p

This option allows the user to switch the preview output from is dedicated keyer output to any of the named signal paths.

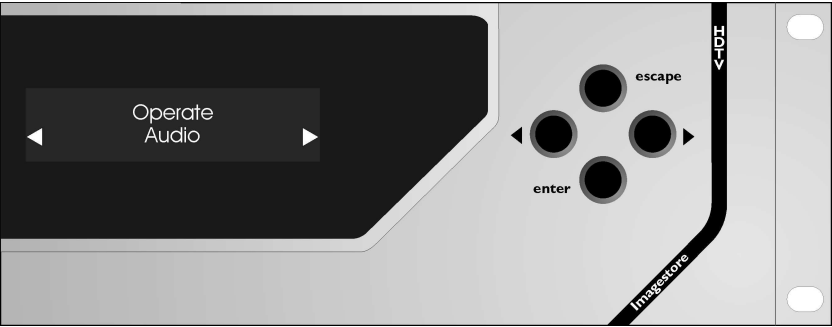


Using the front panel control keys (◀▶) display the preview output source you wish to monitor then press the *enter* key.

To go back a level press *escape* key.

Audio

Select *Operate, Audio*.



Audio menu tree

- Operate
 - Audio
 - Cut to A/B
 - Cut to A
 - Cut to B
 - Fade to A/B
 - Fade to A
 - Fade to B
 - Toggle Silence
 - Fade to Silence
 - Fade from Silence
 - Toggle VO
 - Voice-over 1
 - Voice-over 2
 - Fade up VO
 - Voice-over 1
 - Voice-over 2
 - Fade down VO
 - Voice-over 1
 - Voice-over 2

Select Preview

A Input

B Input

A/B Mix

Voice-over Input

Program

Silence

Test Tone

Input Shuffles

A-Input

Channel 1

(1) 2 3 4

1 (2) 3 4

1 2 (3) 4

1 2 3 (4)

(1) (2) 3 4

(1) 2 (3) 4

(1) 2 3 (4)

1 (2) (3) 4

1 (2) 3 (4)

1 2 (3) (4)

(1) (2) (3) 4

(1) (2) 3 (4)

(1) 2 (3) (4)

1 (2) (3) (4)

(1) (2) (3) (4)

1 2 3 4

Channel 2

(1) 2 3 4

1 (2) 3 4

1 2 (3) 4

1 2 3 (4)

(1) (2) 3 4

(1) 2 (3) 4

(1) 2 3 (4)

1 (2) (3) 4

1 (2) 3 (4)

1 2 (3) (4)

(1) (2) (3) 4

(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Channel 3

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Channel 4

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Voice-over

Channel 1

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Channel 2

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Channel 3

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4

1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Channel 4

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

B-Input

Channel 1

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)

1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Channel 2

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Channel 3

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)

(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4
Channel 4
(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Set Rates

Fade A/B
Fields 1 to 600
Fade to Silence
Fields 1 to 600
Voice-over 1
Fields 1 to 600
Voice-over 2
Fields 1 to 600

Voice-overs

Voice-over 1
Duck
off, -99.5db – 28.0db
Preset
off, -99.5db – 28.0db
Voice-over 2
Duck
off, -99.5db – 28.0db

	Preset
	off, -99.5db – 28.0db
Easyplay	
Store 1	
	Easyplay Load
	Easyplay Start
	Easyplay Stop
	Easyplay Unload
Store 2	
	Easyplay Load
	Easyplay Start
	Easyplay Stop
	Easyplay Unload

The optional Easysound digital audio mixer (ES-HD-8) when fitted within Imagestore HDTV adds voice-overs, jingles and other audio inserts over the programme soundtrack at transmission.

The de-embedder is capable of handling all four groups (16 channels) from both the A and B video inputs and the embedder is capable of handling all four groups (16 channels) to both the Program and Preview outputs. A further eight pairs of AES inputs and outputs are also available. These may be used as prime sources, voice-overs or as delays. All AES inputs and outputs are sampled at 48kHz and locked to video.

The AES outputs are presented on a 25-way D connector to enable easy wiring of mating connectors. Up to 8 channels of 24-bit 48kHz audio can also be simultaneously played out in multiples of two channels.

All internal processing is 24-bit at 48kHz. The following signals appear as inputs to the mixer.

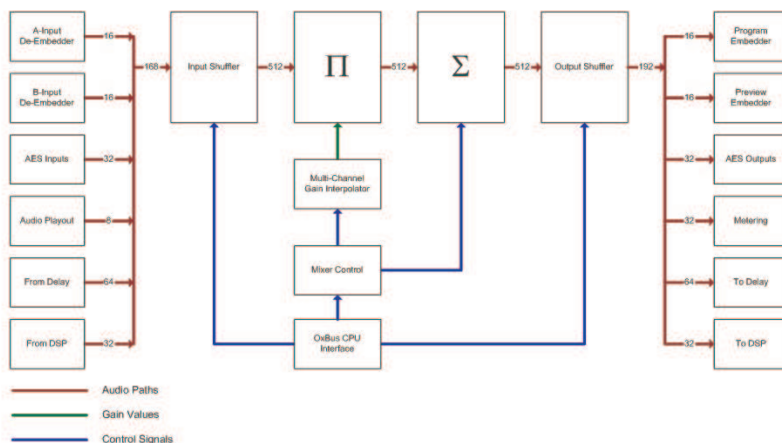
A Input de-embedder	16 channels
B Input de-embedder	16 channels
AES inputs	16 channels

Audio playout	8 channels
Audio delay output	48 channels

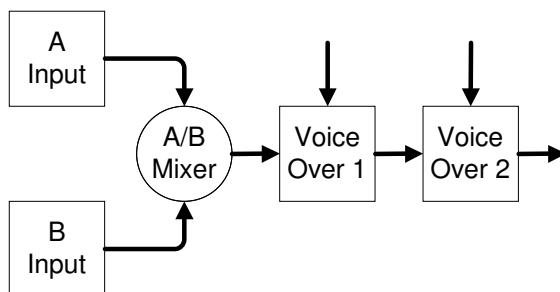
The following signals appear as outputs from the mixer.

Program embedder	16 channels
Preview embedder	16 channels
AES outputs	16 channels
Metering input	16 channels
Audio delay output	48 channels

The data shuffler will read out any input into any one of 512 time slots which will then be fed to a gain multiplier and then into an accumulator. This will allow any combination of inputs to mixed together. The outputs of the accumulator will then be shuffled again to route the correct mixes to the correct outputs.



The HDTV audio model consists of an AB Mixer plus 2 cascaded voice-overs.

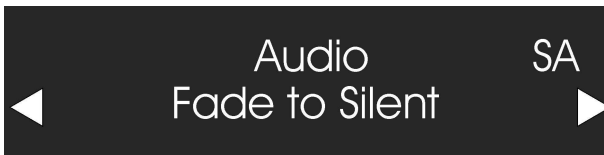


The configuration of inputs and outputs is controlled via a mix file. For further information refer to Audio Mix Files on page 169.

A **CUT** transition is an instant switch to the selected source. This is achieved between frames in the vertical interval so the active picture is allowed to finish before the new data is transmitted.

A **FADE** transition is the gradual process of switching to the selected source with rates adjustable between 1 and 600 fields (10 seconds @ 30 frames / second)

Symbols will appear on the top line of the VFD display indicating the status of the audio.



- A Audio source A cut up (to air)
- B Audio source B cut up (to air)
- intermediate state, transition being processed.
- S Fade to Silent

Cut A/B

Alternatively cuts in the A or B input source from the AB Mixer.

Cut to A

Cuts in the A input source from the AB Mixer.

Cut to B

Cuts in the B input source from the AB Mixer.

Fade A/B

Alternatively fades between the A and B input source from the AB Mixer. The rate, in fields (1 to 600) is set by the *Set Rates, Fade A/B*, command.

Fade to A

Fades in the A input source from the AB Mixer. The rate, in fields (1 to 600) is set by the *Set Rates, Fade A/B*, command.

Fade to B

Fades in the B input source from the AB Mixer. The rate, in fields (1 to 600) is set by the *Set Rates, Fade A/B*, command.

Toggle Silence

Alternatively swaps between program output and silence. The rate, in fields (1 to 600) is set by the *Set Rates, Fade to Silence*, command.

Fade to Silence

Fades down the output to silent. The rate, in fields (1 to 600) is set by the *Set Rates, Fade to Silence*, command.

Fade from Silence

Fades up the output from silent. The rate, in fields (1 to 600) is set by the *Set Rates, Fade to Silence*, command.

Toggle VO***Voice-over n***

Alternates between voice-over 1 or voice-over 2. The rate, in fields (1 to 600) is set by the *Set Rates, Fade A/B*, command.

Fade up VO***Voice-over n***

Fades up voice-over *n*. The rate, in fields (1 to 600) is set by the *Set Rates, Fade A/B*, command.

Fade down VO***Voice-over n***

Fades down voice-over *n*. The rate, in fields (1 to 600) is set by the *Set Rates, Fade A/B*, command.

Select Preview

Select from the list the point you wish to preview.

A-Input
B-Input
A/B Mix
Voice-over Input
Program
Silence
Test Tone

Input Shuffles

Embedded audio consists of 4 groups each containing 4 mono channels. Imagestore HDTV in IS2 Emulation mode only deals with group 1 for both the A and B inputs.

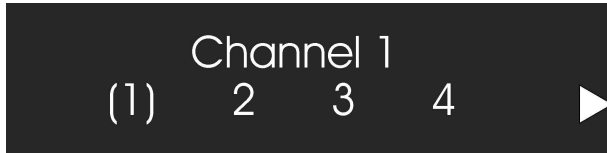
Input Shuffles allow the mono input channels (1 – 4) to be moved around within an output group. In this way; pair swaps, mono to stereo copies, and other audio manipulations can be achieved.

Each output channel can take its input from any of the 4 mono input channels and each input can be copied to multiple output channels.

This will only have the desired effect on the audio system when running the Imagestore HDTV with either of the standard IS2 emulation mixfiles (IS23.mix, IS23eply.mix). Units running non-standard mixfiles may behave differently.

PresMaster Control system will not permit multiple sources to be active on a given output channel and will correct the shuffle states after each source change to a 'legal' state.

If you select A-Input then Channel 1 the VFD display will show the following:



The number in brackets indicates that channel 1 input will be included in Output Channel 1.

Use the arrow control keys (◀▶ *enter*) to select the number of output channels the input is to be included in. This can range from none to all 4 output channels.

Set Rates

Use this menu to change the rate, in fields the desired operation should take. The maximum field rate is 600

- 600 fields = 10 seconds @ 30 frames / second
- 600 fields = 12 seconds @ 25 frames / second.

Fade A/B

Sets the Fades to A and Fade to B rates,

Fade to Silence

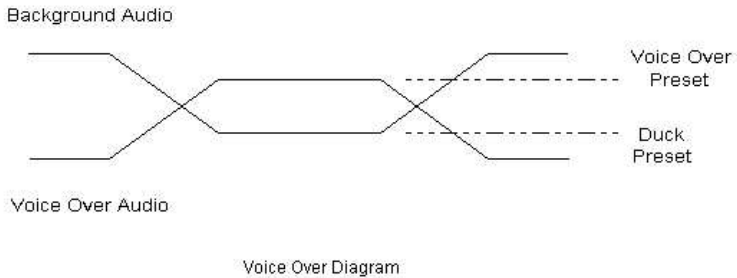
Sets the Fades to Silence and Fade from silence rates,

Voice-over n

Sets the Fades rate for the selected voice-over

Voice-overs

Use this menu to adjust the combined levels of the background audio and incoming voice-over so as not to exceed the original background volume.



The diagram shows the voice over parameters and how Duck and Preset affect the actual audio levels.

Duck

The *Duck* option enables you to adjust (dip) the level of the background audio sound when the voice over is on – the level is measured in dBs (for example, when the voice over is on, the background ducks by –12dB)

Preset

The *Preset* enables you to adjust the level of the voice over audio when the voice over is on (for example, when the voice over is on, the voice over audio comes up to 0dB)

Easyplay

The optional Easyplay licence EP-HD-001 allows users to play audio .wav files off disk.

Store n

Select either Store 1 or 2.

Easyplay Load

Use the arrow control keys (◀▶ *enter*) to select an audio .wav file from disk.

Easyplay Start

Starts the Easyplay .wav file.

Easyplay Stop

Stops the Easyplay .wav file.

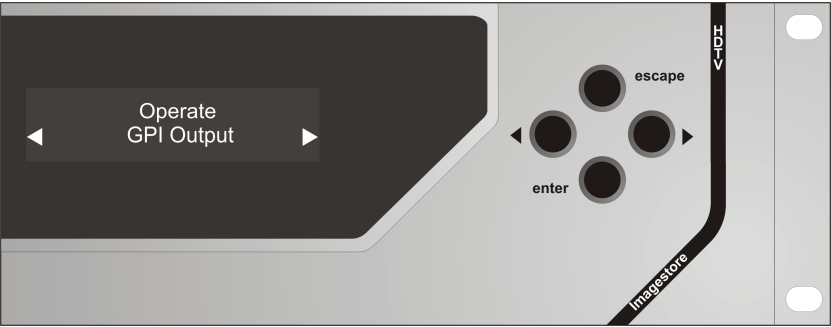
Easyplay Unload

Unloads the Easyplay file from the current store.

Note! .oxe audio files can be created from the AudioBuilder program supplied on the MCS CD.

GPI Output

Select *Operate, GPI Output*.



GPI Output Menu Tree

```
Operate
  GPI Output
    GPI Out 1 On
    GPI Out 1 Off
    .....
    GPI Out 7 On
    GPI Out 7 Off
```

General Purpose Interface Input (GPI) ports may be used to trigger the execution of a series of Imagestore HDTV internal pre-programmed commands (GPI macros). To set up a GPI macro please read the section of this document entitled “GPI Setup” on page 98.

GPI Output

Use the front panel control keys (◀ ▶) to scroll through the list of GPI Out macros. To start a GPI macro to press the *enter* key while the appropriate

“GPI Out ... On” is selected. To stop a GPI macro that is currently running press the *enter* key while the appropriate “GPI Out ... Off” is selected.

Miscellaneous

Select *Operate, Miscellaneous*.



Miscellaneous menu tree

```
Operate
  Miscellaneous
    GPI Macro Delay
    Emergency To Air
    Emergency From Air
    EAS On
    EAS Off
```

These miscellaneous commands are used for setting the GPI macros delay (in fields) and for instigating the emergency to air facility in the event of background video failure.

GPI Macro Delay

Use the front panel control keys (◀ ▶) to adjust the delay value, in fields. When the delay function is called up within a GPI macro, the system will pause for the specified number of fields.

Emergency To Air

In the event of a background video failure an emergency message can easily be sent to air using this command. The emergency image must be stored in the image library under filename **V000.oxt**.

When **Emergency To Air** is selected, Key Layer 1 on the program output channel is faded down over 25 fields. Image V000.oxt is then loaded and faded up over a further 25 fields.

Emergency From Air

When **Emergency From Air** is selected, Key Layer 1 on the program output channel is faded down over 25 fields and the previous image is restored, but not faded up.

EAS On

Setting *EAS On* will load the entire incoming EAS message into memory. It will then cut down the DSK 2 keyer, load the Easytext file (as specified by the priority of the stored message) and bring the crawl to air.

To change the default appearance of the EAS messages (i.e. scroll speed, font size, colour, etc.) the following Imagestore files should be modified within the Easytext application:

- EASHighHD.oxa Priority 1 (high)
- EASMidHD.oxa Priority 2 (medium)
- EASLowHD.oxa Priority 3 (low)

(The render time of the text will depend on the length of the string.
Maximum length = 1990 characters)

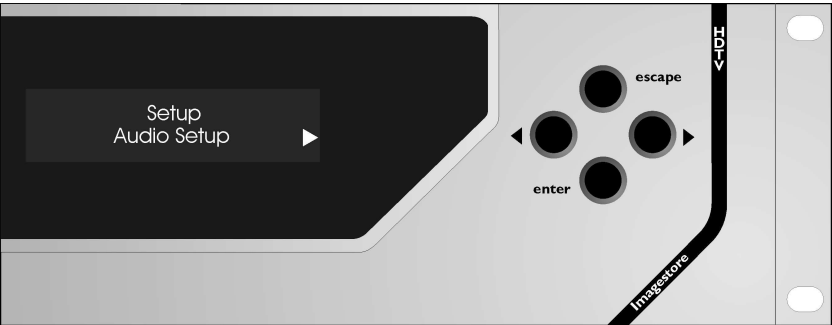
EAS Off

Setting *EAS Off* will remove the EAS crawl from air and restore the original DSK 2 keyer image, only after the entire message has been displayed.

Setup

Audio Setup

Select *Setup*, *Audio Setup*.



Audio Setup menu tree

Setup
Audio Setup
Audio Metering
Meters 1 to 4
Meters 5 to 8
Meters 9 to 12
Meters 13 to 16
Meters 1 and 2
Meters 3 and 4
Meters 5 and 6
Meters 7 and 8
Meters 9 and 10

	Meters 11 and 12
	Meters 13 and 14
	Meters 15 and 16
Follow Video	
A/B Mix	
	On or Off
Fade- to-Black	
	On of Off
Easyplay	
	Follow DSK
	Use Voiceover
Select Mixfile	
	Select file
Delays	
	Delay Bank 1
	Delay Bank 2
	Delay Bank 3
	Delay Bank 4

The audio setup commands are used to display audio meters, set the metering profile according to the audio mix file parameters, determine whether audio follows video, whether the unit is set to IS2 Emulation mode and to set the audio delays of the 4 banks as defined in the audio mix file.

Audio Metering

This option displays audio meters on the front panel. The output is un-calibrated and for indication purposes only.

Meters 1 to 4

Displays 4 metering channels on the VFD display.

***Meters 1 and 2***

Displays 2 metering channels on the VFD display.

Follow Video

Use this option to select whether audio follows video during a video A B mix or Fade to Black.

A/B Mix

Set On or Off.

If set On the system will perform both a video and audio A B mix..

Fade-to-Black

Set On or Off.

If set On the system will fade to silence as the keyer is faded to black.

Easyplay

The following are IS2 legacy options:

Follow DSK

Set On or Off.

If set to On the system will search for a corresponding audio file (.exe) and play it out when the graphic is cut up.

Use Voiceover

Set On or Off.

If set to On the system will activate Voiceover 1 when Easyplay is started.

Select Mixfile

Audio parameters are configured via the standard audio mixfiles.

These files are stored in /etc/mixes.

To change the audio configuration custom mixfiles may be written and stored in /home/mixes.

Use this option to select a mixfile from either directory.

The current mixfile with its directory location will be displayed on the VFD.

Use the arrow control keys (◀▶ *enter*) to select and confirm a new file.

Select <mixfile name> Yes/No.

Once selected the following message is displayed "New setting takes effect on restart".

Delays

Audio sources that require an internal delay can be routed through a delay bank where the delay period can then be set using this menu option between 0 and 32767 samples.

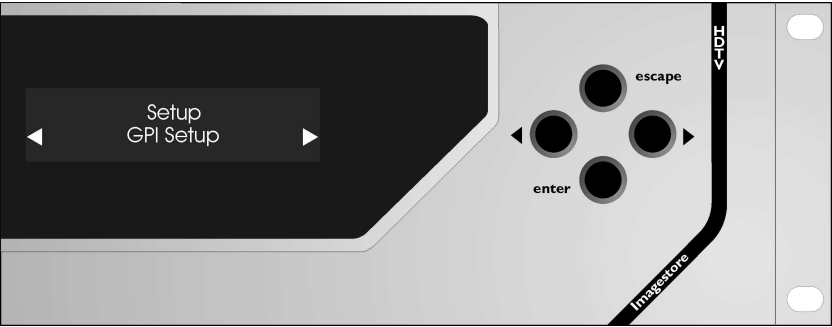
1 sample = 48Khz clock period = 20.833uS, maximum delay = 682.5mS

This option sets an internal audio delay within the systems for any of the 4 audio banks which are defined within the audio mix file.

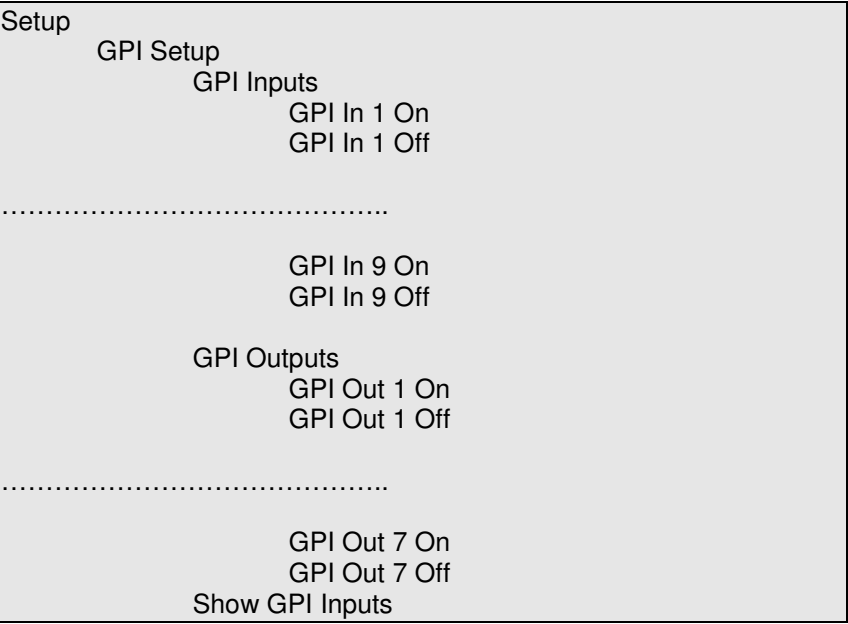
Use the arrow control keys (◀▶ *enter*) to select a bank and then to adjust the timing delay between 0 and 32767 samples.

GPI Setup

Select *Setup*, *GPI Setup*.



GPI Setup menu tree



General Purpose Interface (GPI) ports may be used either to trigger the execution of a series of Imagestore HDTV internal pre-programmed commands (input) or to monitor the status of the Imagestore HDTV (output).

The nine GPI ports are identified as GPI 1 through GPI 9. The first seven ports, GPI 1 through 7, may be configured as either input or output ports whilst the remaining two, GPI 8 and GPI 9 may only be configured as inputs. Any GPI, assigned to 'input', may have a macro associated with it that contains up to 2K bytes of command data (approx. 200 commands strings). When triggered, the commands within the macro execute sequentially. If the GPI is assigned as an 'output', it may only have a single status associated with it.

Input to GPI

Where a GPI port is used as an input, the command macro is activated when either, the connection is made (GPI On) or switched off (GPI Off) relative to the GPI ground pin (pin 13) on the GPI 25way D type connector.

To start a macro associated with GPI In 1 On, make connection between pins 25 (GPI0) and 13 (GPI GND)

To start a macro associated with GPI In 1 Off, break connection between pins 25 (GPI0) and 13 (GPI GND)

For connector information refer to the diagram on page 150.

GPI Channels

GPI	Signal name	Type	GPI Pin No
1	GPI1	IN/OUT	25
2	GPI2	IN/OUT	12
3	GPI3	IN/OUT	24
4	GPI4	IN/OUT	11
5	GPI5	IN/OUT	23
6	GPI6	IN/OUT	10
7	GPI7	IN/OUT	22
8	GPI8	IN	9
9	GPI9	IN	21
GND	GND	GND	13

Create a GPI Macro

To create a macro, display the relevant GPI then press the ***enter*** key. If the GPI is unused *>empty<* will be displayed on the front panel.

Pressing the ***enter*** key again to gain access to the entire Imagestore HDTV *Operate* menu.

Using the arrow keys ◀ ▶ display the first command to be added to the macro and press ***enter*** to add it. The display is now returned to the listing of the macro, showing the added command. To add a second command, use the arrow keys ◀ ▶ to display the next command and press the ***enter*** key as before. Further commands are added to the macro using the same procedure. Approximately 200 command lines may be added to the macro.

GPI Macro Command list

Set Inputs

```
1/A
  Pass SDI
  Force Colour Field
2/B
  Pass SDI
  Force Colour Field
3/Fill-1
  Pass SDI
  Force Colour Field
4/Key-1
  Pass SDI
  Force Colour Field
5/Fill-2
  Pass SDI
  Force Colour Field
6/Key-2
  Pass SDI
  Force Colour Field
```

Mix A Input

1/A
2/B
3/Fill-1
4/Key-1
5/Fill-2
6/Key-2

Mix B Input

1/A
2/B
3/Fill-1
4/Key-1
5/Fill-2
6/Key-2

AB Mixer

Cut AB
Cut To A
Cut To B
Fade AB
Fade To A
Fade To B
Transition Type
X-Fade
V-Fade
Wipe L-To-R
Wipe R-To-L
Wipe T-To-B
Wipe B-To-T
Mix Rate
Wipe Softness
V-Fade Colour
Set Cut Mode
Any Field
Field 1 (Def)
Field 2
Set Fade Mode
Any Field (Def)

Field 1
Field 2

Dual 2D DVE

Play Forward
Play Backward
Run Sequence
DVE Mode
Bypass
None (Delay)
A B over DSK 1
AB Mixer

DSK 1

Keyer Operations
Cut Keyer Up/Down
Cut Keyer Up
Cut Keyer Down
Fade Keyer Up/Down
Fade Keyer Up
Fade Keyer Down
Fade Rate
Set Key Parameters
Source
Self
Separate
None
Type
Full
Linear
Sense
Normal
Invert
Clip, Gain & Trans
Cut To/From Black
Cut From Black
Cut To Black
Fade To/From Black
Fade From Black

- Fade To Black
- FTB Rate
- Input Operations
 - Fill-1/Key-1
 - Fill-2/Key-2
 - Unload Input
- Store Operations
 - Load Image
 - Set Position
 - Set Masking
 - Disable
 - Setup
 - Save Image
 - Unload Image
 - Image Load Mode
 - Clean Load
 - Cut Load
 - Start Strap
 - Stop Strap
 - Start Timer
 - Stop Timer
 - Reset Timer
 - Play Animation
 - Restart Animation
 - Stop Animation
 - Stop Anim Instant

DSK 2

- Keyer Operations
 - Cut Keyer Up/Down
 - Cut Keyer Up
 - Cut Keyer Down
 - Fade Keyer Up/Down
 - Fade Keyer Up
 - Fade Keyer Down
 - Fade Rate
 - Set Key Parameters
 - Source
 - Self

- Separate
- None
- Type
- Full
- Linear
- Sense
- Normal
- Invert
- Clip, Gain & Trans
- Cut To/From Black
- Cut From Black
- Cut To Black
- Fade To/From Black
- Fade From Black
- Fade To Black
- FTB Rate
- Input Operations
- Fill-1/Key-1
- Fill-2/Key-2
- Unload Input
- Store Operations
- Load Image
- Set Position
- Set Masking
- Disable
- Setup
- Save Image
- Unload Image
- Image Load Mode
- Clean Load
- Cut Load
- Start Strap
- Stop Strap
- Start Timer
- Stop Timer
- Reset Timer
- Play Animation
- Restart Animation
- Stop Animation

Stop Anim Instant***Preview Select***

Presmaster Preview
Program o/p
1/A
2/B
3/Fill-1
4/Key-1
5/Fill-2
6/Key-2
DSK 1 Fill o/p
DSK 2 Fill o/p
AB Mixer o/p
DSK 1 o/p
DSK 1 Key o/p
DSK 2 Key o/p

Audio

Cut A/B
Cut to A
Cut to B
Fade A/B
Fade to A
Fade to B
Toggle Silence
Fade to Silence
Fade from Silence
Toggle V0
Voice-over 1
Voice-over 2
Fade Up V0
Voice-over 1
Voice-over 2
Fade Down V0
Voice-over 1
Voice-over 2
Select Preview
A Input

```

B Input
A/B Mix
Voice-over Input
Program
Silence
Test Tone
Input Shuffles
A-Input
Channel 1
  (1) 2 3 4
  1 (2) 3 4
  1 2 (3) 4
  1 2 3 (4)
  (1) (2) 3 4
  (1) 2 (3) 4
  (1) 2 3 (4)
  1 (2) (3) 4
  1 (2) 3 (4)
  1 2 (3) (4)
  (1) (2) (3) 4
  (1) (2) 3 (4)
  (1) 2 (3) (4)
  1 (2) (3) (4)
  (1) (2) (3) (4)
  1 2 3 4
Channel 2
  (1) 2 3 4
  1 (2) 3 4
  1 2 (3) 4
  1 2 3 (4)
  (1) (2) 3 4
  (1) 2 (3) 4
  (1) 2 3 (4)
  1 (2) (3) 4
  1 (2) 3 (4)
  1 2 (3) (4)
  (1) (2) (3) 4
  (1) (2) 3 (4)
  (1) 2 (3) (4)

```

1 (2) (3) (4)
 (1) (2) (3) (4)
 1 2 3 4

Channel 3

(1) 2 3 4
 1 (2) 3 4
 1 2 (3) 4
 1 2 3 (4)
 (1) (2) 3 4
 (1) 2 (3) 4
 (1) 2 3 (4)
 1 (2) (3) 4
 1 (2) 3 (4)
 1 2 (3) (4)
 (1) (2) (3) 4
 (1) (2) 3 (4)
 (1) 2 (3) (4)
 1 (2) (3) (4)
 (1) (2) (3) (4)
 1 2 3 4

Channel 4

(1) 2 3 4
 1 (2) 3 4
 1 2 (3) 4
 1 2 3 (4)
 (1) (2) 3 4
 (1) 2 (3) 4
 (1) 2 3 (4)
 1 (2) (3) 4
 1 (2) 3 (4)
 1 2 (3) (4)
 (1) (2) (3) 4
 (1) (2) 3 (4)
 (1) 2 (3) (4)
 1 (2) (3) (4)
 (1) (2) (3) (4)
 1 2 3 4

Voice-over Channel 1

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4
Channel 2
(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4
Channel 3
(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4

(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

Channel 4

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4

B-Input

Channel 1

(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)

1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4
Channel 2
(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)
(1) (2) (3) (4)
1 2 3 4
Channel 3
(1) 2 3 4
1 (2) 3 4
1 2 (3) 4
1 2 3 (4)
(1) (2) 3 4
(1) 2 (3) 4
(1) 2 3 (4)
1 (2) (3) 4
1 (2) 3 (4)
1 2 (3) (4)
(1) (2) (3) 4
(1) (2) 3 (4)
(1) 2 (3) (4)
1 (2) (3) (4)

```

    (1) (2) (3) (4)
    1   2   3   4
Channel 4
    (1)  2   3   4
    1   (2) 3   4
    1   2   (3) 4
    1   2   3   (4)
    (1) (2) 3   4
    (1) 2   (3) 4
    (1) 2   3   (4)
    1   (2) (3) 4
    1   (2) 3   (4)
    1   2   (3) (4)
    (1) (2) (3) 4
    (1) (2) 3   (4)
    (1) 2   (3) (4)
    1   (2) (3) (4)
    (1) (2) (3) (4)
    1   2   3   4
Set Rates
Fade A/B
Fade to Silence
Voice-over 1
Voice-over 2
Voice-overs
Voice-over 1
Duck
Preset
Voice-over 2
Duck
Preset
Easyplay
Store 1
Easyplay Load
Easyplay Start
Easyplay Stop
Easyplay Unload
Store 2
Easyplay Load

```

```
Easyplay Start
Easyplay Stop
Easyplay Unload
```

GPI Output

```
GPI Out 1 On
GPI Out 1 Off
GPI Out 2 On
GPI Out 2 Off
GPI Out 3 On
GPI Out 3 Off
GPI Out 4 On
GPI Out 4 Off
GPI Out 5 On
GPI Out 5 Off
GPI Out 6 On
GPI Out 6 Off
GPI Out 7 On
GPI Out 7 Off
```

Miscellaneous

```
GPI Macro Delay
Emergency To Air
Emergency From Air
EAS On
EAS Off
```

Edit a GPI Macro

Select the GPI to edit then press *enter*. The macro will be displayed one command line at a time. Use the arrow keys ◀ ▶ to index through to display the appropriate command.

Insert Before

Inserts a new command before the displayed line.

Delete

Deletes the displayed command line.

Insert After

Inserts a new command after the displayed line.

Output from GPI

A GPI port may be used as an output to trigger external devices and its active status, (on), is defined by the output being internally pulled to ground by a "Darlington" configured transistor such that an active low will be represented by +0.7V. Lamps or relays attached to an output GPI may use the GPI +12V supply (pin 8) but the maximum current drawn from this supply should not exceed 500mA. Where a GPI output is used to drive a relay coil, reverse voltage protection diodes should be incorporated into the circuitry to protect the ImagestoreHDTV from voltage transients.

Only GPI 1 to GPI 7 may be assigned as a GPI Output but each GPI may have a condition assigned whether it is set on or off, i.e. GPI Out x On or GPI Out x Off.

Create a GPI output

To create a GPI output, display the relevant GPI then press the ***enter*** key. If the GPI is unused > *None* < will be displayed on the front panel. Press the ***enter*** key again then using the arrow keys ◀ ▶ display the command to be added to the GPI Output and press ***enter*** to add it. Only a single function may be added to a GPI Output.

The options are:

```
None
Mixer at A
Mixer at B
DSK 1 FTB Off
DSK 1 FTB On
DSK 2 FTB Off
DSK 2 FTB On
DSK 1 Fader Off
DSK 1 Fader On
DSK 2 Fader Off
DSK 2 Fader On
```

```
DSK 1 FTB Disabled
DSK 1 FTB Enabled
DSK 2 FTB Disabled
DSK 2 FTB Enabled
DSK 1 Fader Disabled
DSK 1 Fader Enabled
DSK 2 Fader Disabled
DSK 2 Fader Enabled
DSK 1 Timer Zero
DSK 1 Timer Non-Zero
DSK 2 Timer Zero
DSK 2 Timer Non-Zero
DSK 1 Image Busy
DSK 1 Image Ready
DSK 2 Image Busy
DSK 2 Image Ready
DVE Active
DVE Bypass
DVE None
DVE Running
DVE Stopped
EAS Running
EAS Stopped
```

Clear a GPI output

To clear a GPI output select the appropriate GPI and press *enter*. The current entry will be display on the VFD display. Use the arrow keys ◀ ▶ to select *None* then press *enter*.

Show GPI Inputs

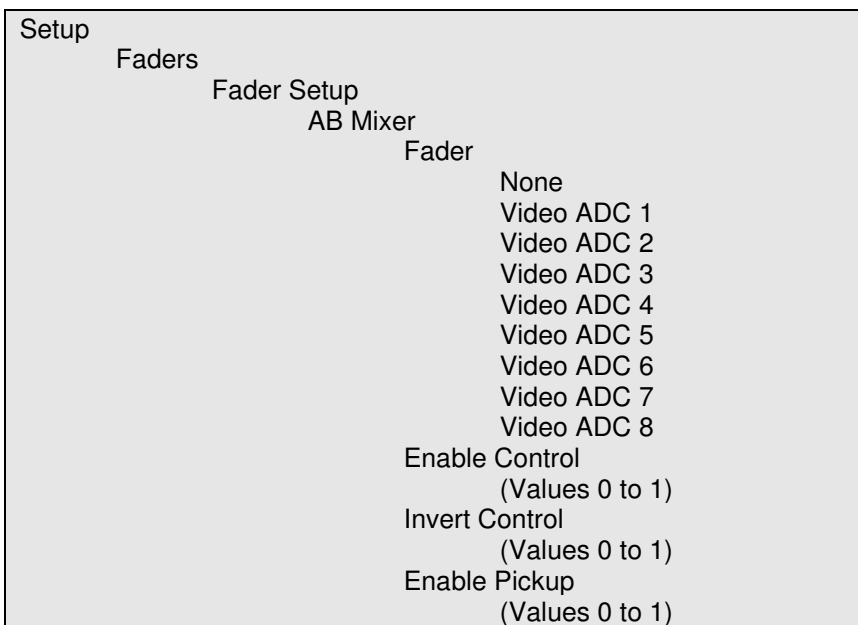
The status screen shows the 9 video ports. As the GPI is triggered externally the corresponding number will be displayed on the front panel display.

Faders Set Up

Select *Setup*, *Fader-Setup*.



Fader Set-Up menu tree



DSK 1 FTB
DSK 2 FTB
DSK 1 Fader
DSK 2 Fader
DSK 1 HPos
DSK 1 VPos
DSK 2 HPos
DSK 2 VPos
DSK 1 Clip
DSK 1 Gain
DSK 1 Trans
DSK 2 Clip
DSK 2 Gain
DSK 2 Trans
DSK 1 AnimPos
DSK 2 AnimPos
Audio AB Mix
Audio Output
FTS Level
VO1 Pr1 Level
VO1 Pr1 Pset
VO1 Pr1 Duck
VO1 Pr2 Level
VO1 Pr2 Pset
VO1 Pr2 Duck
VO Input Level
A Input Level
B Input Level
VO Input Trim
A Input Trim
B Input Trim
Show Fader Inputs
Video ADC 1
Video ADC 2
Video ADC 3
Video ADC 4
Video ADC 5
Video ADC 6
Video ADC 7

Video ADC 8

Configuration

Up to 8 external faders (potentiometers) may be connected through the rear panel GPI port of the Imagestore HDTV. These faders are used to manually control the rate at which the Imagestore HDTV will execute a command and will override settings made through the front panel.

Analogue faders may be used to control fades and mixes. A resistive (linear) potentiometer of at least 10K Ω should have its fixed terminals connected between pin 7 (+5V) and pin 15 (Ground). The variable output of the pot should connect to the appropriate fader input pin.

Screened cable should be used to connect the fader to the Imagestore and the screen of the cable should **only** be connected to ground at the Imagestore end of the cable to avoid *earth loops*, and to restrict extraneous signal levels to less than 1 mV.

To set-up and configure a fader select the option from the menu tree you wish to control. Each option then has a further 4 menu settings.

Fader

Sets the ADC (Analogue to Digital) channel the fader is connected to.

ADC Channels

Fader	ADC No.	Signal name	GPI Pin No
1	ADC 1	ANA_IN0	19
2	ADC 2	ANA_IN1	6
3	ADC 3	ANA_IN2	18
4	ADC 4	ANA_IN3	5
5	ADC 5	ANA_IN4	17
6	ADC 6	ANA_IN5	4
7	ADC 7	ANA_IN6	16
8	ADC 8	ANA_IN7	3
GND	GND	GND	15

Enable Control

Select 1 to enable the fader or 0 to disable it.

Invert Control

Select 1 to invert the mode of the fader or 0 to disable it

Enable Pickup

Select 1 to enable pickup or 0 to disable it.

Control and Pickup are used to determine how the fader will operate if re-enabled. If both are disabled and the fader adjusted, when Control is enabled the fader position is read resulting in a jump to that position.

If Pickup is enabled and the fader adjusted, when Control is enabled the fader will only become active when the value at which the fader was deselected is reached.

Show Fader Inputs

This option displays the amount of fader being used from 0% - 100%. It is also represented as a bar graph on the VFD.



File Operations

Select *Setup*, *File Operations*.



File Operations menu tree

Setup

File Operations

- Load Image File
 - Media Inserted?
- Erase Image
 - Confirm?
- Load Audio File
 - Media Inserted?
- Erase Audio File
 - Confirm?
- Configuration Save
 - Media Inserted?
- Configuration Load
 - Media Inserted?
- Diagnostics Save
 - Media Inserted?
- Load System Codes
 - Media Inserted?
- Load Mixfile
 - Media Inserted?

**Erase Mixfile
Confirm?**

These options are used for basic library management.

Load Image File

Copies an image from the inserted media³ to the image library.

Supported formats:

Stills .oxt

Animations/Easytext .oxa

Erase Image

Index through the images within the image library using the arrow control keys ◀ ▶. One selected press *enter* to delete.

Load Audio File

Copies an audio file from the inserted media (floppy drive) to the sound library.

Supported formats:

IS HDTV audio file (multi channel) .oxe

IS2 format audio file .oxw

Erase Audio File

Index through the files within the sound library using the arrow control keys ◀ ▶. Once selected press *enter* to delete.

Configuration Save

Copies the configuration file (conf.xml) to the inserted media. The configuration file is updated every 64 fields providing something has

³ Inserted media = Floppy disk. If when saving files a “No Media Inserted” message occurs then check the floppy disk’s write protection tab is off.

changed and is a series of automation commands that reflect the status of the keyers / mixers.

Configuration Load

Copies the configuration file (conf.xml) from the inserted media to the hard disk

Diagnostic Save

Copies the diagnostic files to the inserted media.

Messages.old Log file from previous uptime

Messages.new Log file from current uptime

Load System Codes

Copies new licence codes (syscodes.txt), which enable software options onto the Imagestore HDTV.

Load Mixfile

Copies new mixfiles (all files ending in .mix) from the inserted media (floppy drive) to the hard disk.

Erase Mixfile

Index through the files within the mixes library using the arrow control keys ◀ ▶. Once selected press *enter* to delete.

System Information

Select *Setup, System Information*.



System Information menu tree

Setup

- System Information
 - Serial Number
 - Operating system (Linux X.X.XX)
 - File System Type
 - Hostname
 - IP Address
 - Network Mask
 - Gateway Address
 - NTP Server
 - Animation Memory
 - Images Used
 - Disk Space Used
 - Current Mix File
 - Slot 1 (card type and Rev #)
 - Slot 2 (card type and Rev #)
 - Slot 3 (card type and Rev #)
 - Slot 4 (card type and Rev #)
 - Slot 5 (card type and Rev #)
 - Slot 6 (card type and Rev #)
 - RS232 Counters

```
RS422 A Counters
RS422 B Counters
Internal Temp
-12V Supply
+1.8V Supply
+3.3V Supply
+5.0V Supply
+2.5V Supply
+12V Supply
Time Zone
Current Time   dd/mm/yyyy hh:mm:ss
Running Since  dd/mm/yyyy hh:mm:ss
```

These options are used to view the following:

Serial Number

Displays the unit's serial number on the VFD display. This number is factory set and cannot be adjusted.

Operating System

Shows the version number of the installed Linux operating system.

File System Type

For systems upgraded from earlier software versions (prior to 1.13.x) this will be Linux second extended file system (EXT2). Although the Imagestore software is case-insensitive, the file system is not.

For newer systems (initialised with software version 1.13.x or later) journaling file system (JFS) is used. JFS supports case insensitive file names.

Hostname

This section of System Information shows the unit's Hostname. To modify the Hostname please refer to page 140.

IP Address

This menu displays the unit's IP Address number. To modify the address refer to page 71.

Network Mask

This menu displays the unit's Network Mask (sub-net mask) number. To modify the number refer to page 71.

Gateway Address

This menu displays the unit's Gateway Address number. To modify the number refer to page 142.

NTP Server

This displays the IP Address of the NTP Server.

If the NTP Server address is set to 255.255.255.255, then the menu displays "Disabled"

Animation Memory

This menu displays the size of the animation memory fitted.

64 + 64 to 512 + 512 Mbytes.

Images Used

This menu displays the number of images in the image library.

eg 84 (of 1000).

Disk Space Used

Displays the amount of disk space used in the image directory.

Current Mix File

Displays the name of the installed mixfile and its location.

Slot 1-6

Displays what type of PCB is installed in the system. If no PCB is fitted the slot number will display 'Empty'. If a PCB is fitted its type, HD Input, HD Output or HD Store including the revision number will be shown.

RS232 Counters

This menu displays RS232 port errors:

Rx	Received data
Tx	Transmitted data
BI	Breaks
OE	Overrun errors
FE	Framing errors
PE	Parity errors

RS422 A-B Counters

This menu displays RS422 errors for ports A - B:

Internal Temp

This reads the internal temperature of the unit adjacent to the LM80 device on the video backplane.

Please note that the real internal air temperature is much lower than the temperature reported by the front panel. This is mainly due to the probe's location next to a hot component.

The following table shows air temperature measurements taken against the reported temperature from the front panel. The unit under test was a fully populated 2006 build unit.

Reported temperature (°C)	38	43	47	50	55
Real probe temperature (°C)	32	35	38	40	46
General unit air temperature (°C)	29	31	34	36	40

-12V Supply

Displays the voltage of the -12V supply rail. The -12V is not used however.

+1.8V Supply

Displays the voltage of the +1.8V supply rail.

+3.3V Supply

Displays the voltage of the +3.3V supply rail.

+5.0V Supply

Displays the voltage of the +5.0V supply rail.

+2.5V Supply

Displays the voltage of the 2.5V supply rail.

+12V Supply

Displays the voltage of the +12V supply rail.

Time Zone

This shows the time offset in hours and minutes ($\pm$ HHMM) from GMT.

Current Time

Displays the date and time.

Running Since

Indicates date and time when the unit was last powered up (i.e. absolute time not elapse time).

View Licences

Select *Setup*, *View Licences*.



This command will display on the front panel VFD all installed licenses. Use the arrow control keys ◀ ▶ to iterate through the list.

Set Time of Day

Select *Setup*, *Set Time of Day*.



Use this command to set the RTC (real time clock) in the Imagestore HDTV.

Set Time-of-Day menu tree

Setup
 Set Time-of-Day
 Year
 Month
 Day
 Hour
 Min
 Sec

Year

Sets the year between 2000 - 2100

Month

Sets the month between 1 - 12

Day

Sets the day between 1 - 31

Hour

Sets the hour between 0 - 23

Min

Sets the minutes between 0 - 59

Sec

Sets the seconds between 0 - 59

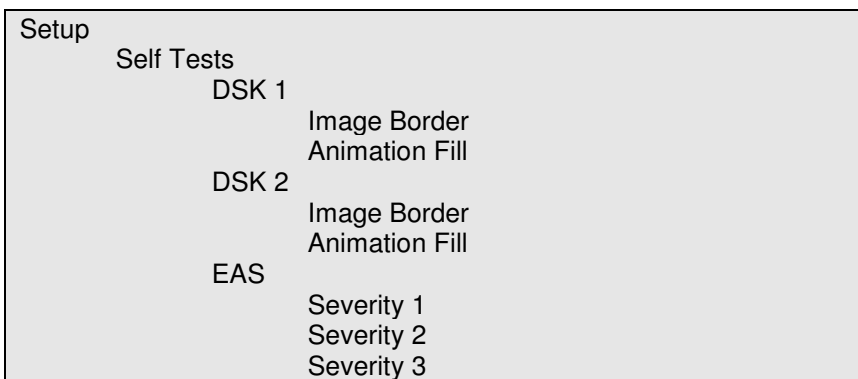
Self Tests

Select *Setup, Self Tests*.



Use this menu to display an internally generated EAS test message.

Self Tests menu tree



DSK 1

Image Border

Displays a full screen test pattern of 4 pixel width coloured borders

Animation Fill

Imagestore HDTV has a self-test programme to verify the correct installation of store memory modules. The Animation Fill self test will generate an animation sequence to fill the store memory module of the given layer. The animation is no different from one loaded from a file, and in particular:

- ◆ For the animation to fill the store, either (i) the Image Load Mode must be Clean Load, or (ii) any existing image on that layer must be unloaded.
- ◆ For the animation to be visible, the layer must be cut up.
- ◆ The animation can be repositioned, masked, and unloaded in the normal way.

The animations are loaded via the following menu items:

Setup > Self Tests > DSK 1 > Animation Fill

Setup > Self Tests > DSK 2 > Animation Fill

The animation is in the form of a progress bar, filling the image from left to right with a green background, keyed as a ramp, and repeating continuously.

- ◆ If the green traverses 1 column, the unit is licensed for 64Mb.
At 59.94 fields/s, the animation will run for 2.14 seconds.
- ◆ If it traverses 2 columns, the unit is licensed for 128Mb.
At 59.94 fields/s, the animation will run for 4.28 seconds.
- ◆ If it traverses 4 columns, the unit is licensed for 256Mb.
At 59.94 fields/s, the animation will run for 8.55 seconds. The test loading time is ~25 seconds.
- ◆ If it traverses all 8 columns, the unit is licensed for 512Mb.
At 59.94 fields/s, the animation will run for 17 seconds. The test loading time is ~45 seconds.
- ◆ If the animation is continuous (i.e. without purple frames), then the unit has the correct store memory module fitted.

**Note! Unload the self test animation after completing the test.
 Refer to page 67 Store Operations.**

DSK 2

As DSK 1

EAS**Severity 1**

Red scrolling banner displaying 'A Primary Entry Point System has issued an Emergency Action Notification for the United States beginning at 1:27 pm and ending at 2:27 pm (IMST)'

Severity 2

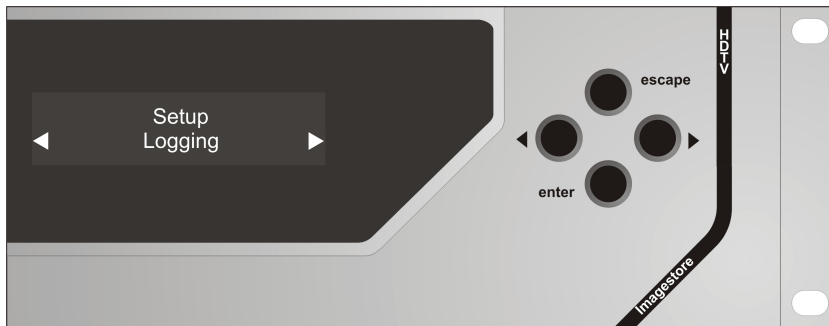
Amber scrolling banner displaying 'The Civil Authorities have issued a Severe Thunderstorm Watch for San Francisco, CA beginning at 1:31 pm and ending at 2:31 pm (IMST)'

Severity 3

Green scrolling banner displaying 'A Broadcast station or cable system has issued a Required Weekly Test for Snohomish, WA beginning at 1:26 pm and ending at 2:26 pm (IMST)'

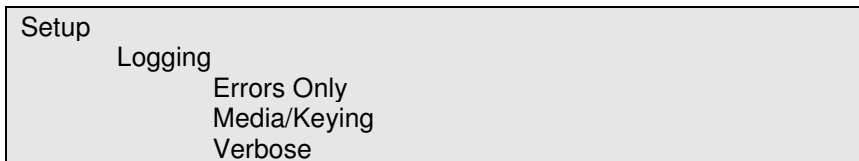
Logging

Select *Setup, Logging*.



Use this menu to set the logging level used for the messages log file.

Logging menu tree



Errors Only

This logging level reports errors, including automation commands that were invalid when received. No valid automation commands get logged in this mode.

Media/Keying

In addition to errors, this logging level records all valid media and keying activity. This gives a full audit of which graphics have appeared on-air.

Verbose

This logging level gives a full record of all automation commands received by the unit, whether valid or not.

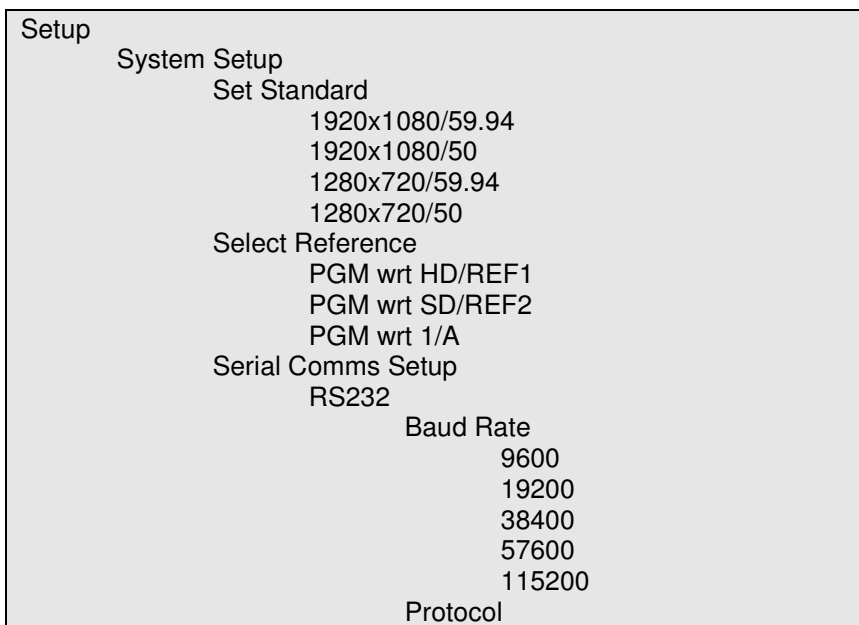
System Setup

Select *Setup*, *System Setup*.



Use this menu tree to adjust the following:

System Setup menu tree



	Automation
	Presmaster
	Easysound
	Intuition
	ENDEC Model 1822
	TFT EAS 911T
RS422 A	
Baud Rate	
	9600
	19200
	38400
	57600
	115200
Protocol	
	Automation
	Presmaster
	Easysound
	Intuition
	ENDEC Model 1822
	TFT EAS 911T
RS422 B	
Baud Rate	
	9600
	19200
	38400
	57600
	115200
Protocol	
	Automation
	Presmaster
	Easysound
	Intuition
	ENDEC Model 1822
	TFT EAS 911T
Timecode Options	
Timecode Source	
	LTC
	VITC

Timecode Status
Intuition Setup
Def Keyer Assign
None
DSK 1
DSK 2
Keyer Release Mode
Disabled
Enabled
Keyer Status
Keyer Status
Fill & Key Input
Fill/Key
Hostname
IP Address
Network Mask
Gateway Address
NTP Server
Time Zone
Console Blanking
Restart-System
Confirm?
Factory Reset
Confirm?
Safe Shutdown

Set Standard

Use this option to select the appropriate video standard. After selecting the new standard and pressing the *enter* key the VFD display will indicate that the EEPROM is being updated shortly followed by a '**Please Restart For New Standard**' message.

Restart the Imagestore HDTV.

Note	Unload all images before changing between video standards especially interlaced and progressive.
-------------	---

Select Reference

Use this option to select the appropriate reference input source.

PGM wrt (with respect to) HD/REF1

This is the recommended method of referencing Imagestore HDTV. The REF1 input, the upper of the 2 REF BNCs, is for a high definition tri-level sync and is terminated to 75Ω .

PGM wrt SD/REF2

The REF2 input is for a standard definition black and burst analog sync. The input, the lower of the 2 REF BNCs, is terminated to 75Ω . Using an SD analog sync for HD on-air systems is **NOT** recommended as it may introduce excessive jitter into the HD-SDI stream. This jitter, at the low frequency field rate, could potentially affect the performance of downstream equipment.

PGM wrt 1/A

This option will lock the Imagestore HDTV to the incoming serial bit-stream of input 1/A. This should only be used for single input channel units where the 1/A input is valid at all times. In multiple input systems, if the 1/A input is switched by a station router there may be disruption in the output signal.

Adjusting reference timing

Warning:

Reference timing should always be adjustment off-air since it can result in loss of picture in downstream equipment. Errors may occur in the HD-SDI stream whilst the adjustment is taking place.

VANC data such as captions and audio metadata may be missed by downstream equipment if they are not seen to be on the same line number that they were input on. Reference adjustment affects the line number marking of the output stream. It needs to be adjusted to match the signal path delays of the local facility.

Clean switching between the inputs is made possible by buffering the inputs in line FIFOs to co-time them before processing. The reference timing will adjust the active depth of the FIFOs to allow for wider timing differences between the input signals.

The shortest video processing delay from any input through the Imagestore HDTV to the PGM output is approximately 1us and occurs when the input line FIFO depth is at its minimum. By increasing the output reference timing w.r.t (with respect to) the 1/A input the FIFO depth is lengthened up to its maximum of 1 line.

Timing is dependent on the relative phase between the SDI input and the tri level sync. To illustrate the set up refer to the following.

This examples deals with a system where the SDI input arrives 3us earlier than the associated tri level sync . We will call this timing ‘-3us’. If the SDI were to arrive 5us after the tri level sync the timing would be ‘+5us’.

To set the minimum SDI delay through the unit of 1us:

As 1/A is 3us earlier than the tri level sync and PGM is at least 1us later than A, set the reference timing to $1 + (-3) \text{ us} = 0 \text{ln} -2\text{us}$.

To adjust the FIFOs to the recommended half full state then the PGM output will be 13us later than the inputs. Co-timed inputs will then have approximately half of a HDTV line buffered in their FIFOs. Any sources that arrive a earlier or later will increase or reduce the FIFO depth respectively. Set the reference timing to $13 + (-3) \text{ us} = +10\text{us}$.

In conclusion, if you know the path delays, set the timing offset to (actual delay through unit – SDI input timing w.r.t. reference sync timing) in lines and microseconds.

If the relative delays are not known, use the following:

First, adjust the reference so that the picture is correctly positioned vertically to the exact line. This can only be done precisely using an HD-SDI data analyser.

Next, adjust the reference timing to the point at which the output moves up or down one line. This point needs to be moved away from as it is where the line FIFO length jumps between 0 and 1 line.

For stable timing move away from this point, for example by half a HDTV line, to about 13us. Recheck the vertical alignment. If it is out then move the timing by a number of lines till it is correct.

Timing delay through the Imagestore HDTV

Refer to the Dual 2D DVE section if the DVE is installed.

The delay through the unit can be up to 1 HD line. This consists of the input line FIFO depth plus a video processing delay of around 1 μ s. The exact data delay depends on the adjustment of the reference timing.

Each HD-SDI input has a one line input FIFO. These FIFOs are timed so that the active picture data from all sources is synchronised prior to video processing.

Serial Comms Setup

This sets the baud rate and protocol for each of the 3 communication ports on the rear panel.

The protocol can be set for Automation, Presmaster, Easysound, Intuition installations or either of the 2 EAS units.

Presmaster

If the Imagestore HDTV is being controlled by a Presmaster system then the connected port must be set to *Presmaster*.

Easysound

If an Easysound Standalone unit is connected to the Imagestore HDTV then the connected port must be set to *Easysound*.

Intuition

If an Intuition unit is connected to the Imagestore HDTV then the connected port must be set to *Intuition*.

EAS

If either of the 2 supported EAS units are connected to the Imagestore HDTV set the port to:

- ENDEC Model 1822, or
- TFT EAS 911T

respectively.

Automation

In all other cases where the Imagestore HDTV is being controlled by automation or a Presmaster system set the port to *Automation*.

Timecode Options

When physically connected, the LTC or VITC timecode source is used to adjust the internal clock once per minute. When a timecode source is not connected, the internal clock will be free running. The internal clock is also available as an Easytext data source."

Timecode Source

Allows you to select between LTC or VITC as a timecode source.

Timecode Status

Displays the LTC or VITC timecode on the VFD display.

If no timecode is present ***CRC or Framing Error*** is reported.

Intuition Setup

This menu configures the Imagestore HDTV when used in conjunction with an Imagestore Intuition, advanced channel branding system.

Refer to the Imagestore Intuition section on page 187.

Def Keyer Assign

This option enables Automatic Keyer Management which sets the selected keying layer for Intuition control. When the Intuition keyer is cut up the Imagestore HDTV will perform a 'Load Live' on that layer and display the composited stream. As additional Intuition layers are cut up the Imagestore will continue to display the composited stream.

None

No Automatic Keyer Management set. Imagestore will ignore the Intuition output.

DSK1

Automatic Keyer Management enabled on DSK1 (Midground keyer).

DSK2

Automatic Keyer Management enabled on DSK2 (Foreground keyer).

Keyer Release Mode

This option defines how the keyer is released from Intuition control.

Disabled

Disabled mode leaves the Imagestore keyer cut up when all Intuition keys are cut down.

Enabled

Enabled mode turns off the Imagestore keyer if all Intuition keys are cut down.

Keyer Status

Intuition can combine up to 14 virtual keying layers into its composited output. This menu displays the active layers.

***Hostname***

This option displays the unit's Hostname and enables the user to modify it. The Hostname will be shown on the VFD display with brackets > and <

around each character in turn indicating that each character can be adjusted as required.

Use the arrow control keys ◀ ▶ to increase or decrease the value of the first character. Pressing the *enter* key will accept the new value and index to the second character. Repeat the process until the all characters have been modified.

Pressing the *enter* key to accept the change will then display the message 'New setting takes effect on restart'.

Restart the Imagestore HDTV.

IP Address

This option displays the unit's IP Address number and enables the user to modify it. The IP Address will be shown on the VFD display with a plus (+) and minus (-) symbol at either end indicating that the value can be adjusted between (0 and 255).

The number is in four blocks separated by full stops i.e.

10.96.98.240

Use the arrow control keys ◀ ▶ to increase or decrease the value of the first block (10). Pressing the *enter* key will accept the new value and index to the second block (96). Repeat the process until the all blocks have been modified.

Pressing the *enter* key to accept the change will then display the message '**Updating EEPROM**' shortly followed by '**Please Restart For New IP Address**'.

Restart the Imagestore HDTV.

Network Mask

This option displays the unit's Network Mask (sub-net mask) number and enables the user to modify it.

The Network Mask number will be shown on the VFD display with a plus (+) and minus (-) symbol at either end indicating that the value can be adjusted between (0 and 255).

The number is in four blocks separated by full stops i.e.

- >255<255.0.0 +

The mask number is set for Class B addresses and should only be modified in consultation with your IT department.

To adjust the number, refer to the IP Address section (see above).

Pressing the *enter* key to accept the change will then display the message '**Updating EEPROM**' shortly followed by '**Please Restart For New Network Mask**'.

Restart the Imagestore HDTV.

Gateway Address

This option displays the unit's Gateway Address and enables the user to modify it.

The Gateway Address will be shown on the VFD display with a plus (+) and minus (-) symbol at either end indicating that the value can be adjusted between (0 and 255).

The number is in four blocks separated by full stops i.e.

- >255<255.255.255 +

The factory default option is disabled and should only be modified in consultation with your IT department.

To adjust the number, refer to the IP Address section (see above).

Pressing the *enter* key to accept the change will then display the message '**Updating EEPROM**' shortly followed by '**Please Restart For New Network Mask**'.

Restart the Imagestore HDTV.

NTP Server

This option allows the clock in the IS HDTV to be set from a *Network Time Protocol* server located on the network.

Using the arrow control keys enter the IP address of your NTP server. (See IP Address).

The number is in four blocks separated by full stops i.e.

- >255<255.255.255 +

Time Zone

Use this option to set the timezone offset from GMT (+/-) in hours, minutes and seconds.

Console Blanking

Console Blanking acts as a screen saver if a PC monitor is attached via the VGA connector of the CPU board.

Use the arrow control keys ◀ ▶ to set either Disabled or between 1 – 60 minutes. At the allotted time the output to the monitor will be switched off. To turn it back on either press a key on the PC keyboard (if connected) or reset the time interval.

Restart System

Restarts the systems maintaining user setting. Press *enter* to confirm.

Factory Reset

Restarts the systems returning the unit to factory default settings. Press *enter* to confirm.

Note: All custom set parameters will be removed.
--

Safe Shutdown

This feature halts the operating system in a controlled manner by saving files to disk before shutting down.

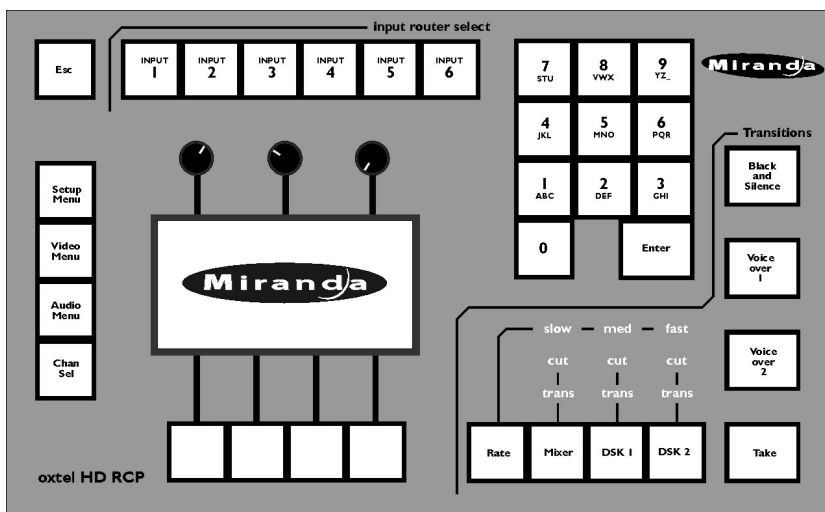
Oxtel RCP-HD Operations

Introduction

This section provides a basic introduction to the Imagestore HDTV Remote Control Panel (Oxtel RCP-HD) and describes the features and facilities provided by the unit.

Only connect the remote control panel to the Oxtel RCP port found amongst the PCI connections on the rear panel, refer to page 149.

The RCP unit **MUST** be connected to the Imagestore HDTV before it is powered. Connecting to an already powered unit will not show the correct status on its indicator lamps and switches.



Controls

The Oxtel RCP-HD comprises a backlit LCD display, dedicated push-button (switches with legends), and potentiometers. It also includes four option buttons (soft keys) used to control the main level and sub level LCD menus. The list of options available will depend on the licences installed in the Imagestore HDTV):

- ◆ Mixer (optional feature)
- ◆ Logos (standard feature included with all Imagestore HDTV systems)

During the power-up self-test sequence the integral lamps within each push-button switch will illuminate in turn.

The following paragraphs describe the use of the Oxtel RCP-HD controls.

Display

The LCD display provides interactive access to the control menus of the connected Imagestore HDTV. The top level menu display of the Oxtel RCP-HD will be shown shortly after power is supplied and can be reached at any time by repeatedly pressing the **Esc** key.

Push Button Switches

The RCP has thirty dedicated pushbuttons of which eleven comprise an alphanumeric keypad ("0" to "9YZ" plus *Enter*). The following paragraphs describe the use of each button in turn.

Esc Key

The **Esc** key is used to cancel an option or to return back up the menu structure to the main display.

Input Router Select 1-6 Keys

The six keys to the right of the **Esc** key are the router control keys and are used to determine the input channels for the AB Mixer.

Alphanumeric Keypad

The alphanumeric keypad comprises keys **0** to **9YZ_** and the **Enter** key. These keys are not normally illuminated and become illuminated only when a procedure is selected that requires their use.

Setup Menu

Feature not yet available.

Video Menu

The **Video Menu** key provides access for setting the Mixer and DSK parameters via the LCD.

Mixer

Transition type

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the **Mixer** soft key.

Mixer			
DSK1: filename.ext DSK2: filename.ext			
Trans		Rate	

Press the **Trans** soft key.

Mixer Trans		
X Fade	V Fade	OK

Select the appropriate transition type,
X Fade or V fade.

Mixer Trans		
Transition: X Fade		
X Fade	V Fade	OK

The select option will appear on
screen.

Press the **OK** soft key to accept the
changes.

Rate

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Mixer			
DSK1: filename.ext DSK2: filename.ext			
Trans		Rate	

Slow 50	Med 25	Fast 12
Mixer Rates Duration in Frames		
		OK

Press the **Mixer** soft key.

Press the **Rate** soft key.

Adjust the rates using the rotary pots above each heading.

Press the **OK** soft key to accept the changes.

DSK#

Input source

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the relevant **DSK** soft key

DSK1			
DSK1: filename.ext DSK2: filename.ext			
Input	File	Edit	Pos.

Press the **Input** soft key

DSK1 Input			
DSK1: filename.ext DSK2: filename.ext			
F1+K1	F2+K2	Empty	

Select the appropriate input source:

Fill 1 Key 1 = (Inputs 3 and 4)

Fill 2 Key 2 = (Inputs 5 and 6)

Empty = Input from store

DSK1 Input			
DSK1: F1+K1 DSK2: filename.ext			
F1+K1	F2+K2	Empty	

The selected source will now be shown on screen.

Press the **Ecs** key to go back up the menu tree.

Load file

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the relevant **DSK** soft key

DSK1			
DSK1: filename.ext DSK2: filename.ext			
Input	File	Edit	Pos.

Press the **File** soft key

DSK1 File			
DSK1: filename.ext DSK2: filename.ext			
Load	Pos.	Save	

To load an image, press the **Load** soft key.

DSK1 Load			
now> filename.ext new> filename.ext			
<	>		OK

Use the arrow control soft keys < > to locate the file in the image library. Once displayed press the **OK** soft key to load it.

DSK1 File			
DSK1: filename.ext DSK2: filename.ext			
Load	Pos.	Save	

The LCD display will return to the *File* screen showing the new file name.

Position file

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the relevant **DSK** soft key

DSK1			
DSK1: filename.ext DSK2: filename.ext			
Input	File	Edit	Pos.

Press the **File** soft key

DSK1 File			
DSK1: filename.ext DSK2: filename.ext			
Load	Pos.	Save	

To position an image, press the **Pos.** soft key.

Lft/Rgt 0	DSK1	Up/Dwn 0	
Move Image			
	HCrop	VCrop	OK

To adjust the images on-screen position, use the rotary pots above each heading.

Press the **OK** soft key to accept the changes.

Horizontal Crop

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the relevant **DSK** soft key

DSK1			
DSK1: filename.ext DSK2: filename.ext			
Input	File	Edit	Pos.

Press the **File** soft key

DSK1 File			
DSK1: filename.ext DSK2: filename.ext			
Load	Pos.	Save	

To position an image, press the **Pos.** soft key.

Lft/Rgt 0	DSK1	Up/Dwn 0
Move Image		
	HCrop	VCrop
	OK	

Press the **HCrop** soft key

LEFT 0	DSK1	RIGHT 0
Horizontal Crop		
Pos.		VCrop
	OK	

Adjust the images horizontal crop values by using the rotary pots above each heading.

Press the **OK** soft key to accept the changes.

Vertical Crop

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the relevant **DSK** soft key

DSK1			
DSK1: filename.ext DSK2: filename.ext			
Input	File	Edit	Pos.

Press the **File** soft key

DSK1 File			
DSK1: filename.ext DSK2: filename.ext			
Load	Pos.	Save	

To position an image, press the **Pos.** soft key.

Lft/Rgt 0	DSK1	Up/Dwn 0	
Move Image			
	HCrop	VCrop	OK

Press the **VCrop** soft key

TOP 0	DSK1	BOTTOM 0	
Vertical Crop			
Pos.	HCrop		OK

Adjust the images vertical crop values by using the rotary pots above each heading.

Press the **OK** soft key to accept the changes.

Save file

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the relevant **DSK** soft key

DSK1			
DSK1: filename.ext DSK2: filename.ext			
Input	File	Edit	Pos.

Press the **File** soft key

DSK1 File			
DSK1: filename.ext DSK2: filename.ext			
Load	Pos.	Save	

To save a modified image press the **Save** soft key.

DSK1 Save			
REPLACE> filename.ext			
			OK

Press **OK** soft key to replace the file in the image library.

Clip Gain & Transparency

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the relevant **DSK** soft key

DSK1			
DSK1: filename.ext DSK2: filename.ext			
Input	File	Edit	Pos.

Press the **Edit** soft key

DSK1 Edit			
DSK1: filename.ext DSK2: filename.ext			
CGT	Mode		

To adjust the Clip, Gain and Transparency press the **CGT** soft key.

Clip 0	Gain 1023	Trans 512	
DSK1 Edit CGT			
			OK

Adjust the values using the rotary pots above each heading.

Press the **OK** soft key to accept the changes.

Keying Modes

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the relevant **DSK** soft key

DSK1			
DSK1: filename.ext DSK2: filename.ext			
Input	File	Edit	Pos.

Press the **Edit** soft key

DSK1 Edit			
DSK1: filename.ext DSK2: filename.ext			
CGT	Mode		

To adjust the key modes press the **Mode** soft key.

None	Full	Normal	
DSK1 Key Modes			
Srce.	Type	Sense	OK

Adjust the keying modes by pressing the appropriate soft key.

By pressing the **Srce.** soft key the box below the left hand pot will toggle between:

None, Separate and Self

By pressing the **Type** soft key the box below the centre pot will toggle between:

Full and Linear

By pressing the **Sense** soft key the box below the right hand pot will toggle between:

Normal and Invert

Press **OK** to accept the changes.

Fade to Black rate

Video			
DSK1: filename.ext DSK2: filename.ext			
Mixer	DSK1	DSK2	FTB

Press the **FTB** soft key

Slow 50	Med 25	Fast 12
FTB Rates Duration in Frames		
		OK

Adjust the FTB rates by using the rotary pots above each heading.

Press **OK** to accept the changes

Audio Menu

The **Audio Menu** key provides access for setting the Mixer, Inputs and Voiceover parameters via the LCD.

Transitions

A/B Mix

Audio			
DSK1: filename.ext DSK2: filename.ext			
Trans	Input		O/put

Press the **Trans** soft key.

Adjust Trans			
DSK1: filename.ext DSK2: filename.ext			
A/B	FTS	VO 1	VO 2

Press the **A/B** soft key.

	Rate 200	
A/B Mix		
AFV	Cut	Fade
OK		

Select the **AVF** soft key to toggle whether audio follows video.

Press the **Cut** or **Fade** soft key to perform an audio A/B mix. The fade rate is shown on the LCD and controlled via the central rotary pot.

Press the **OK** soft key to accept the changes.

Fade to Silence

Audio			
DSK1: filename.ext DSK2: filename.ext			
Trans	Input		O/put

Press the **Trans** soft key.

Adjust Trans			
DSK1: filename.ext DSK2: filename.ext			
A/B	FTS	VO 1	VO 2

Press the **FTS** soft key.

	Rate 200	
Audio Trans. Fts		
AFV	Cut	Fade
		OK

Select the **AVF** soft key to toggle whether audio follows video.

Press the **Cut** or **Fade** soft key to perform a Fade to Silence. The fade rate is shown on the LCD and controlled via the central rotary pot.

Press the **OK** soft key to accept the changes.

Voice Overs

Audio			
DSK1: filename.ext DSK2: filename.ext			
Trans	Input		O/put

Press the **Trans** soft key.

Adjust Trans			
DSK1: filename.ext DSK2: filename.ext			
A/B	FTS	VO 1	VO 2

Press either **VO1** or **VO2** soft key.

Duck 0dB	Preset 0dB	Rate 43	
Voiceover 1			
AFV	Cut	Fade	OK

Select the **AVF** soft key to toggle whether audio follows video.

Press the **Cut** or **Fade** soft key to activate the voice over.

The fade rate is shown on the LCD and controlled via the right hand rotary pot.

The Duck and Preset levels are also displayed on screen and controlled via the rotary pots above each heading.

Press the **OK** soft key to accept the changes.

Inputs

A, B, VO1, VO2

Audio			
DSK1: filename.ext DSK2: filename.ext			
Trans	Input		O/put

Audio Inputs			
DSK1: filename.ext DSK2: filename.ext			
A	B	VO 1	VO 2

Muted	Inverted	Level 0dB	
Input A			
Mute	Phase		OK

Press the **Input** soft key.

Press the appropriate **A B VO1** or **VO2** soft key.

To Mute the input press the **Mute** soft key. Muted is then displayed on the LCD.

To Invert the input press the **Phase** soft key. Inverted is then displayed on the LCD

The input level (volume) is shown on the LCD and controlled via the right hand rotary pot.

Press the **OK** soft key to accept the changes.

Outputs

Program

Audio			
DSK1: filename.ext DSK2: filename.ext			
Trans	Input		O/put

Program 0dB		
Audio Outputs		
Prev+	Prev-	OK

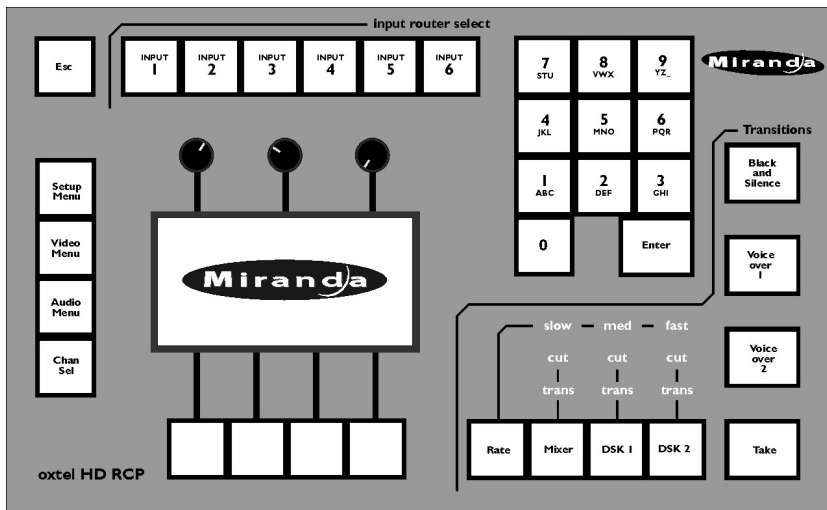
Press the **O/put** soft key.

The Program output level (volume) is shown on the LCD and controlled via the left hand rotary pot.

To index through the named signal preview points press the **Prev+** and **Prev-** soft keys

Press the **OK** soft key to accept the changes.

Transitions



The buttons grouped under the **Transitions** banner control the AB Mixer, Key layers 0 (DSK1) and 1 (DSK2) and transition rates. Those along the bottom of the panel marked **Rate** to **Take** mirror the signal path through Imagestore HDTV. Once a rate has been set use the **Mixer** button to set the background video source then use **DSK1** and **DSK2** to insert stills, animations or live inputs. After the set-up is complete press the **Take** button to go to air.

Rate

Pressing the **Rate** button will index sequentially through the 3 setting of **slow**, **med** and **fast**. As each option is selected it is illuminated.

*To set the rates use the **Video Menu** button as described previously.*

The rate (in frames) will only effect the **trans** (variable fade transitions) selection of the AB Mixer and DSK buttons, as the **cut** command is an instantaneous action.

Mixer

The AB Mixer is an integral 2 input video switcher, which provides the background video source to the program keyers, DSK1 and DSK2. The mixer can be configured for **cut**, **trans** (variable fade transitions) or none (no option illuminated). Pressing the **Mixer** button will toggle through the options.

Selecting the source

The **Input router select** buttons numbered Input 1-6 control the source into the AB Mixer. The active source is identified with a brightly lit button whilst the switched source is shown with a dimly lit button. The number of sources available is dependant on the number of input cards fitted. To change the switched source select one of the unlit buttons. When the **Take** button is pressed the source will be swapped and the dim button will turn bright and the bright button dim.

cut

If cut is selected the AB Mixer is armed and the resultant transition is previewed through the preview channel. When the **Take** button is pressed a Cut AB transition is actioned and the video source will change on the program output. The mixer will then be disarmed and the selected option set to none (no option illuminated).

trans

If trans is selected the AB Mixer is armed and the resultant transition is previewed through the preview channel. When the **Take** button is pressed a Fade AB transition is actioned and the video source will change on the program output. The mixer will then be disarmed and the selected option set to none (no option illuminated).

DSK 1

DSK1 is the first keying layer (midground). Use this button to control how the loaded image is inserted over the background video. DSK1 can be configured for **cut**, **trans** (variable fade transitions) or none (no option illuminated). Pressing the **DSK 1** button will toggle the options.

*To load an image into the keyer use the **Video Menu** button as described previously.*

cut

If cut is selected DSK 1 is armed and the image is previewed through the preview channel. When the **Take** button is pressed a Cut Keyer Up transition is actioned and the image will appear on the program output. DSK 1 will then be disarmed and the selected option set to none (no option illuminated).

trans

If trans is selected DSK 1 is armed and the image is previewed through the preview channel. When the **Take** button is pressed a Fade Keyer Up transition is actioned and the image will appear on the program output. DSK 1 will then be disarmed and the selected option set to none (no option illuminated).

If no option is illuminated the **Take** button will be inactive.

The DSK 1 button will remain illuminated whilst the image is on-air.

DSK 2

See controls for DSK 1.

Take

Pressing the Take button will activate all armed DSK's and the Mixer, sending the transition to air.

Black and Silence

Pressing the **Black and Silence** button will send the total output of Key Layer 0 and 1 to black. The transition types are:

- ◆ Cut to Black
- ◆ Cut from Black
- ◆ Fade to Black
- ◆ Fade from Black

Voice-Over 1

Pressing the **Voice-Over 1** button will activate an Easyplay file or external voice over on groups 1 and 2, depending on the unit's license.

Voice-Over 2

Pressing the **Voice-Over 2** button will activate an external voice over on groups 3 and 4.

Chan Sel

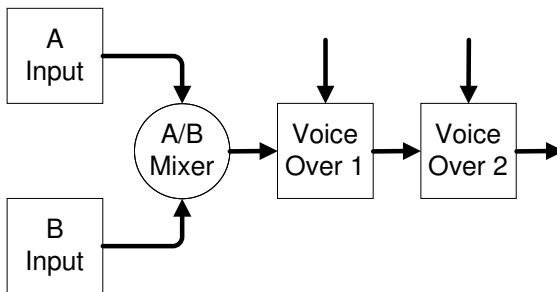
Feature not yet available.

Audio Mix Files

Introduction

This section explains the mix file structure used to create the audio mix files for Imagestore HDTV. Please see the Standard Mixfiles section on page 221 for the extended information and in-depth functionality of the standard mixfiles.

The conceptual mixer arrangement used in Imagestore HDTV is based on the Imagestore 2 Easysound audio model. This is an A/B mixer followed by a number of cascaded voice-overs.

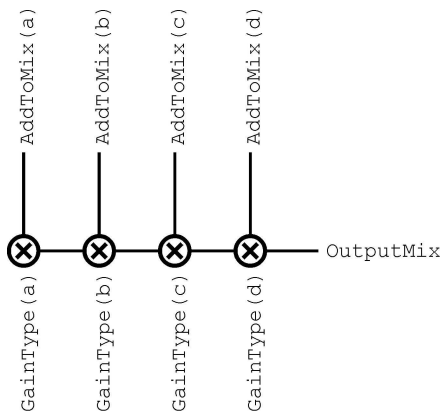


By using the same conceptual model backwards compatibility with the Easysound audio automation protocol can be maintained, however, there are a few subtle differences.

Internally, the Imagestore HDTV has two voice-overs as opposed to the two stereo pairs in Imagestore 2. A mapping is performed:

Imagestore 2	Imagestore HDTV
Voice-over 1, Pair 1	Voice-over 1
Voice-over 1, Pair 2	Voice-over 2

The audio board in Imagestore HDTV contains a 512 x 512 cross-point multiplier switcher where all inputs and outputs are configurable and where cross-point are controlled by the GainType field of the AddToMix command.



Mix Files

The mix file is used to specify sets of audio sources or inputs to be mixed together using certain rules and then assigning the result to a particular destination or output. Each of these sets of sources is referred to as a ‘mix’. There is no limit to the number of mixes contained in the mix file but the total number of sources added to *all* mixes must be less than or equal to 512.

The default mix file used is named “is23.mix”. If the unit has an Easyplay licence, then a slightly different mixfile “is23eplay.mix” is used.

For a complete listing of the mixfiles refer to page 221

Sources

Sources are any input signals that may be added to a mix. For example the right-hand channel of the first pair of audio group three, de-embedded from the SDI A input, this signal has the name A_G3_P1_R.

All inputs are considered equal and are available at all times.

A complete list of input sources can be found on page 180.

Note: If the embedded audio option has not been purchased, the de-embedder sources will be silent.

Gain Types

Each input source must be assigned a cross-point gain type whenever it is added to a mix. The gain type defines the behaviour of the particular input as used in the conceptual model.

ZERO_XP	Zero gain
UNITY_XP	Unity gain
UNITY_XP	Unity gain
A_DATA_XP	A input data path
B_DATA_XP	B input data path
A_XP	A/B mixer A input
B_XP	A/B mixer B input
VO1_XP	Voice-over 1
VO3_XP	Voice-over 2
EPLAY_XP	Easyplay gain
A_UNITY_XP	A input data path
B_UNITY_XP	B input data path
VO1_UNITY_XP	Voice-over 1 preview
VO3_UNITY_XP	Voice-over 2 preview

ZERO_XP

The ZERO_XP gain type will pass the input signal with $-\infty$ dB gain.

UNITY_XP

The UNITY_XP gain type will pass the input signal with no gain change.

A_DATA_XP/B_DATA_XP

The DATA_XP gain type result in zero or unity gains. The changeover occurs instantaneously at a pre-defined point during A/B transitions. Only one A_DATA_XP and B_DATA_XP should be used in any particular mix. An example mix file using a stereo data path can be found in the examples section.

A_XP/B_XP

The A_XP and B_XP gain types are used for the A and B inputs to the A/B mixer respectively. The gains applied depend on the position and behaviour of the A/B mixer.

VO1_XP/VO3_XP

The gain types VO1_XP and VO3_XP correspond to Voiceovers 1 and 2 respectively. These apply the preset voice-over level to the assigned input when that particular voice-over is turned on. This also causes any signal before that voice-over in the audio path to be ducked to the preset duck level. If a voice-over gain type is not used in a particular mix then no ducking will occur in that mix.

EPLAY_XP

The EPLAY_XP gain type only becomes active when Easyplay is playing an audio clip.

A_UNITY_XP/B_UNITY_XP

The A_UNITY_XP gain type will pass the input signal with no gain change. It follows any source changes applied to the A and B audio paths to provide accurate input previewing and is insensitive to A B transitions. Mute and Trim gains will be reflected.

VO1_UNITY_XP/VO3_UNITY_XP

The VO1_UNITY_XP and VO3_UNITY_XP gain types will pass the input signals for voiceovers 1 and 2 with no gain change. They are used to preview the voice-overs off air.

Output Gain Types

Each output can be assigned a cross-point gain type. The gain type defines the behaviour of the particular output as used in the conceptual model. If no gain type is specified, the output audio will be UNITY (unchanged).

PROGRAM_GAIN	Modify output gain by the value of the Program gain.
--------------	--

PROGRAM_GAIN

The PROGRAM_GAIN type will modify the output's gain by the value of the program gain (set with the j103 automation command). Any channels that are required to be modified by the program gain should be set to this gain type. Additionally, if metering is required to reflect the program gain's value, any meters assigned to program outputs should also be set to this gain type.

Destinations

Each mix can be mapped to any number of destinations, however, each destination can only come from one mix. An example destination would be

the left-hand channel of AES output pair 5 (AES_O_P5_L) or one of the 16 metering points.

A full list of output destinations can be found on page 181.

Mix File Commands

The mix file is constructed from a series of commands, which are used to create mixes. The order of the commands is important. Commands can be separated from their arguments by one or more spaces or tabs. Comments can be included in the mix file on a line starting with a '#' character. Blank lines are ignored.

StartMix

StartMix "<MixName>"

Creates a new mix with the name MixName .

The name can be up to 16 characters.

Sources added to this mix will be accumulated.

This command can only be used as the first command or immediately after EndMix.

AddToMix

AddToMix <Source> <GainType>

Adds to the mix a named source with the specified gain type.

This command can only be used after StartMix and before EndMix.

SetOutputGain

OutputMix <Destination> <GainType>

Sets the gain type of Destination to be GainType.

This command must be used after the last AddToMix commands for the current mix and before EndMix.

OutputMix

OutputMix <Destination>

Maps the AddToMix inputs of the current mix to the specified output (destination).

This command must be used after the last AddToMix commands for the current mix and before EndMix.

EndMix

Ends the current mix.

This command can only be used after StartMix.

Simple mix structure

This example show the mix structure needed to create a stereo data path.

```
# Creates a stereo data path using AES input 1 as A,  
# AES input 2 as B and AES output 1 as the result.
```

```
StartMix      "DataPathL"  
AddToMix      AES_I_P1_L    A_DATA_XP  
AddToMix      AES_I_P2_L    B_DATA_XP  
OutputMix     AES_O_P1_L  
EndMix
```

```
StartMix      "DataPathR"  
AddToMix      AES_I_P1_R    A_DATA_XP  
AddToMix      AES_I_P2_R    B_DATA_XP  
OutputMix     AES_O_P1_R  
EndMix
```

Input Bunches

AddToMix <Source> <GainType> <InputProfile> <MixDown>

To provide better management of multi-channel inputs, the concept of Input Bunches has been introduced. The rationale for this is to use Automation Commands and the User interface that already exist for finite audio

configurations. Four Input Bunches are available and these correspond to the four mono input channels that were available on Imagestore 2. When a command is sent that was intended to target a certain input channel, it will be interpreted as a command to target the corresponding Input Bunch and all audio channels in the Input Bunch will be similarly controlled.

To indicate that a specific crosspoint should be associated with a specified bunch, a number of new GainType specifiers have been added.

A_XP_1	A/B mixer A input bunch 1
A_XP_2	A/B mixer A input bunch 2
A_XP_3	A/B mixer A input bunch 3
A_XP_4	A/B mixer A input bunch 4
B_XP_1	A/B mixer B input bunch 1
B_XP_2	A/B mixer B input bunch 2
B_XP_3	A/B mixer B input bunch 3
B_XP_4	A/B mixer B input bunch 4
VO1_XP_1	Voice-over 1 input bunch 1
VO1_XP_2	Voice-over 1 input bunch 2
VO1_XP_3	Voice-over 1 input bunch 3
VO1_XP_4	Voice-over 1 input bunch 4
VO3_XP_1	Voice-over 2 input bunch 1
VO3_XP_2	Voice-over 2 input bunch 2
VO3_XP_3	Voice-over 2 input bunch 3
VO3_XP_4	Voice-over 2 input bunch 4

Enhanced Mix File Commands

Whilst the basic set of mixfile commands is sufficient to configure the Imagestore HDTV, there are some extensions to these commands that provide advanced functionality.

Input Bunch Profiles

`AddToMix <Source> <GainType> <InputProfile>`

`AddToMix` sources assigned in the mixfile and are usually fixed, however, there may be a need to change sources during operation. Typically, this re-routing is known as ‘input shuffles’.

Input Bunch Profiles provide a way of implementing ‘input shuffles’ by allowing the user to externally modify the content of the mix during operation by switching in and out various sources. Input profiles act as enables and are typically used where a selection of input sources have to be supported.

Each input bunch has a profile associated with it. Input Bunch Profiles can be controlled using existing input shuffle Automation commands (see below).

Each `GainType` associated with an `AddToMix` command can be given an `InputProfile` value between 0 and 31. The relevant `GainType` (switch) is only then enabled (included in the mix) when the `InputProfile` parameter specified matches the Input Bunch Profile value set externally by Automation control. If the Input Bunch Profile value is different from the mixfile, the specified crosspoint will be excluded from the mix.

If the `InputProfile` field is omitted from the `AddToMix` command, then a value of 0 is assigned and the specified `GainType` will only be enabled when the associated Input Bunch Profiles is set to (or left at its default value of) 0.

Inputs can be included in a variety of mixes as defined in the mix file but the user may only wish to include them if certain conditions are met. The

InputProfile field is a way of externally controlling the contents of the mix.

The following example shows a mix.

If the InputProfile of GainType A_XP bunch 0 is externally set to 0 then the AddToMix source A_G1_P1_L will be added to the OutputMix source AES_O_P1_L, however, if the value of GainType A_XP bunch 0 is externally set to 4 then AddToMix source A_G1_P1_R will be included in the mix.

```
StartMix      "Preview AB1L Mix"
AddToMix      A_G1_P1_L      A_XP_1      0
AddToMix      A_G1_P1_R      A_XP_1      4
OutputMix     AES_O_P1_L
EndMix
```

Refer to the Oxtel Automation Protocol manual for automated control of Bunch Profiles.

MixDown

AddToMix <Source> <GainType> <InputProfile> <MixDown>

The MixDown field of the AddToMix command allows sources to be added to the mix, but at an attenuated level.

Source configurations controlled by input profiles may require more than just simple re-routing operations. For missing signals that would normally be present there may often be a need to generate them from a combination of two or more existing source inputs. In such cases, the sum of the inputs is likely to give rise to a significantly louder output signal. The MixDown field is used to specify an attenuation level that is applied to the input source. The field specifies a divisor used to attenuate the source signal, e.g. a value of 2 would result in a 50% (~6dB) attenuation.

If the MixDown field is omitted, a value of 1 is used.

Note if the `MixDown` field is present, the `InputProfile` field should also be present. Where an `InputProfile` is not specified a value of 0 is used.

Example:

```
AddToMix      B_G1_P1_R      B_XP      0/2
```

This command line specifies that when the input source is included in the mix it will be attenuated by 50% before being added.

Monitor Profiles

OutputMix <Destination> <MonitorType> <MonitorProfile>

As Input Profiles control the input of a mix so Monitor Profiles control the output. By adding the `MonitorType` and `MonitorProfile` fields, the output is only enabled when the conditions are met.

Monitor Profiles act as enables and only switch the output on when the `MonitorProfile` value is correspondingly set externally via the front panel or Automation control. `MonitorType` 1 corresponds to Preview, `MonitorType` 2 corresponds to Meters and `MonitorType` 3 to Monitor. For this reason, the `Monitor Type` field can optionally be specified in the mixfile as a number or its equivalent text representation.

Text representation	MonitorType value
PREVIEW	1
METERS	2
MONITOR	3

Example:

```
OutputMix      METER_5      2      1
```

```
OutputMix      METER_5      METERS 1
```

These two commands are equivalent. In both cases, the commands specify that the output of the current mix should only be routed to `METER_5` when the `MonitorProfile` of `MonitorType` 2 (conventionally Meters) is set to 1.

Input Source names (AddToMix)

Slot No.	Input Name	Description	Group	Pair	Channel
0	A_G1_P1_L	SDI A-input de-embedder	1	1	Left
1	A_G1_P1_R		1	1	Right
2	A_G1_P2_L		1	2	Left
3	A_G1_P2_R		1	2	Right
4	A_G2_P1_L		2	1	Left
5	A_G2_P1_R		2	1	Right
6	A_G2_P2_L		2	2	Left
7	A_G2_P2_R		2	2	Right
8	A_G3_P1_L		3	1	Left
9	A_G3_P1_R		3	1	Right
10	A_G3_P2_L		3	2	Left
11	A_G3_P2_R		3	2	Right
12	A_G4_P1_L		4	1	Left
13	A_G4_P1_R		4	1	Right
14	A_G4_P2_L		4	2	Left
15	A_G4_P2_R		4	2	Right
64	B_G1_P1_L	SDI B-input de-embedder	1	1	Left
65	B_G1_P1_R		1	1	Right
66	B_G1_P2_L		1	2	Left
67	B_G1_P2_R		1	2	Right
68	B_G2_P1_L		2	1	Left
69	B_G2_P1_R		2	1	Right
70	B_G2_P2_L		2	2	Left
71	B_G2_P2_R		2	2	Right
72	B_G3_P1_L		3	1	Left
73	B_G3_P1_R		3	1	Right
74	B_G3_P2_L		3	2	Left
75	B_G3_P2_R		3	2	Right
76	B_G4_P1_L		4	1	Left
77	B_G4_P1_R		4	1	Right
78	B_G4_P2_L		4	2	Left
79	B_G4_P2_R		4	2	Right
128	AES_I_P1_L	AES input		1	Left
129	AES_I_P1_R			1	Right
130	AES_I_P2_L			2	Left
131	AES_I_P2_R			2	Right
132	AES_I_P3_L			3	Left
133	AES_I_P3_R			3	Right
134	AES_I_P4_L			4	Left
135	AES_I_P4_R			4	Right

136	AES_I_P5_L			5	Left
137	AES_I_P5_R			5	Right
138	AES_I_P6_L			6	Left
139	AES_I_P6_R			6	Right
140	AES_I_P7_L			7	Left
141	AES_I_P7_R			7	Right
142	AES_I_P8_L			8	Left
143	AES_I_P8_R			8	Right
192	PLAY_1	Easyplay payout			1
193	PLAY_2				2
194	PLAY_3				3
195	PLAY_4				4
196	PLAY_5				5
197	PLAY_6				6
198	PLAY_7				7
199	PLAY_8				8
256	DELAY1_I_1	Input from delay			1
to	to				to
319	DELAY4_I_64				64
320	TEST_TONE	1 kHz, 0 dBFS test tone			

Output Source names (OutputMix)

Slot No.	Output Name	Description	Group	Pair	Channel
0	PGM_G1_P1_L	SDI Program output embedder	1	1	Left
1	PGM_G1_P1_R		1	1	Right
2	PGM_G1_P2_L		1	2	Left
3	PGM_G1_P2_R		1	2	Right
4	PGM_G2_P1_L		2	1	Left
5	PGM_G2_P1_R		2	1	Right
6	PGM_G2_P2_L		2	2	Left
7	PGM_G2_P2_R		2	2	Right
8	PGM_G3_P1_L		3	1	Left
9	PGM_G3_P1_R		3	1	Right
10	PGM_G3_P2_L		3	2	Left
11	PGM_G3_P2_R		3	2	Right
12	PGM_G4_P1_L		4	1	Left
13	PGM_G4_P1_R		4	1	Right
14	PGM_G4_P2_L		4	2	Left
15	PGM_G4_P2_R		4	2	Right

64	PVW_G1_P1_L	SDI Preview output embedder	1	1	Left
65	PVW_G1_P1_R		1	1	Right
66	PVW_G1_P2_L		1	2	Left
67	PVW_G1_P2_R		1	2	Right
68	PVW_G2_P1_L		2	1	Left
69	PVW_G2_P1_R		2	1	Right
70	PVW_G2_P2_L		2	2	Left
71	PVW_G2_P2_R		2	2	Right
72	PVW_G3_P1_L		3	1	Left
73	PVW_G3_P1_R		3	1	Right
74	PVW_G3_P2_L		3	2	Left
75	PVW_G3_P2_R		3	2	Right
76	PVW_G4_P1_L		4	1	Left
77	PVW_G4_P1_R		4	1	Right
78	PVW_G4_P2_L		4	2	Left
79	PVW_G4_P2_R		4	2	Right
128	AES_O_P1_L	AES output		1	Left
129	AES_O_P1_R			1	Right
130	AES_O_P2_L			2	Left
131	AES_O_P2_R			2	Right
132	AES_O_P3_L			3	Left
133	AES_O_P3_R			3	Right
134	AES_O_P4_L			4	Left
135	AES_O_P4_R			4	Right
136	AES_O_P5_L			5	Left
137	AES_O_P5_R			5	Right
138	AES_O_P6_L			6	Left
139	AES_O_P6_R			6	Right
140	AES_O_P7_L			7	Left
141	AES_O_P7_R			7	Right
142	AES_O_P8_L			8	Left
143	AES_O_P8_R			8	Right
192	METER_1	Metering point			1
196	METER_2				2
200	METER_3				3
204	METER_4				4
208	METER_5				5
212	METER_6				6
216	METER_7				7
220	METER_8				8
224	METER_9				9
228	METER_10				10
232	METER_11				11
236	METER_12				12

240	METER_13				13
244	METER_14				14
248	METER_15				15
252	METER_16				16
256	DELAY1_O_1	Output to delay			1
to	to				to
319	DELAY4_O_64				64

Mixfile mapping

The standard IS2 mixfiles (IS23.mix and IS23epl.y.mix) assign the following:
AES Input pins:

AES_1± and AES_2±	A input Pair 1 and Pair 2
AES_3± and AES_4±	VO1 Pair1 and Pair 2
AES_5± and AES_6±	B input Pair 1 and Pair 2

AES Output pins:

AES_1± and AES_2±	PVW output Pair 1 and Pair 2
AES_3± and AES_4±	PGM output Pair 1 and Pair 2

Emergency Alert System

Imagestore HDTV supports the Emergency Alert System providing the relevant EAS-HD-001 licence is installed.

Imagestore HDTV monitors its RS232 port for a serial string received from an EAS receiver. When a message is received its priority is established and the text is written and stored into one of the following default Easytext crawl templates:

Priority 1	EASHigh.oxa
Priority 2	EASMed.oxa
Priority 3	EASLow.oxa
No priority	EASNone.oxa

Note: The EAS message can only be displayed via a GPI or automation command. To set the relevant GPI refer to page 199 and for automation commands refer to the Oxtel Series Automation Protocol manual.

EAS Receivers

The supported EAS receivers are:

- Sage ENDEC Model 1822.
- TFT EAS 911

To select an EAS model use the:

Setup>System Setup> Serial Comms Setup>RS232>Protocol, menu path.

Use the arrow keys ◀▶ to select the required unit then press *enter*. The system will need restarting.

Baud Rates

Baud rates are automatically set when the appropriate EAS unit is selected.

Load EAS (EAS On)

Setting *EAS On* will load the EAS message into memory. It will cut down the DSK1 keyer if active and load the EAS template (as specified by the priority of the stored message) and bring the crawl to air.

(The render time of the text will depend on the length of the string.
Maximum length = 2048 characters)

Unload EAS (EAS Off)

Setting *EAS Off* will remove the EAS crawl from air once it has completed. It will cut down the crawl and restore the DSK 2 keyer to its original state.

EAS logs

All EAS transactions are recorded in the standard Imagestore HDTV log files;

LOG{Serial number}.log and
LOG{Serial number}.old.

Access to the log file can be gained by copying it to a floppy disk. From the front panel menu select *Setup > File Operations > Diagnostics Save*.

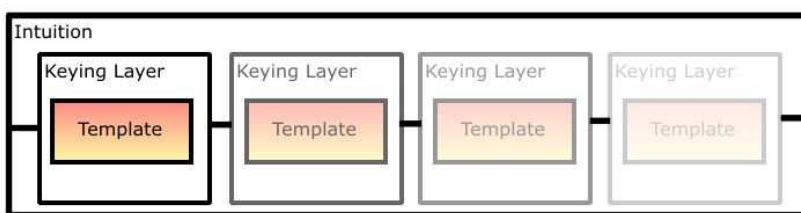
The file can then be viewed on a PC.

Imagestore Intuition

We recommend controlling an Imagestore Intuition directly from automation as it uses the same Oxtel Series Automation protocol interface. However, if an additional automation port is not available then the Imagestore can be placed in a mode where it can forward commands to the Intuition, as shown below.



Imagestore Intuition can simultaneously transmit templates or animation files loaded through numerous virtual keying layers. These files are composited into one signal that feeds through the FILL and KEY inputs of the Imagestore HDTV.



The composited stream (virtual layers) then get loaded into DSK1 or DSK2 layers via the 'Load Live' feature.

Imagestore HDTV has only two keying layers. The Intuition has up to 16 (virtual) keying layers. How do we address both units via the Imagestore control port?

The Imagestore keying layer parameter in the command protocol is represented by a single character, this is currently set to 0 (DSK1, midground) or 1 (DSK2, foreground) to address the keying layer in the Imagestore HDTV. The character range has been extended from 0x0 to 0xF to address the keying layers above 1. This means that automation vendors can now support the greater number of keying layers on offer.

If Intuition is being controlled directly via automation then the full 16 layers are available. If it is connected and controlled via an Imagestore then only 14 layers are available.

For example, if an Imagestore HDTV receives a command to load a graphic into layer '2', it will forward this command onto the Intuition to load the graphic into the first Intuition keying layer. To do this it must subtract 2 from the layer value before relaying the command. Note, layer 0 in the intuition is the first layer. To illustrate this further:

Imagestore Layer Number	Intuition Layer Number
0x0 (Midground)	
0x1 (Foreground)	
0x2	0x0
0x3	0x1
0x4	0x2
0x5	0x3
0x6	0x4
0x7	0x5
0x8	0x6
0x9	0x7
0xA	0x8
0xB	0x9
0xC	0xA

0xD	0xB
0xE	0xC
0xF	0xD

Using this method of load and control commands we can now address up to 16 keying layers, 2 in Imagestore and 14 in Intuition.

Imagestore Intuition Control

The Imagestore HDTV has to be configured to operate with an Intuition. From the front panel select:

Setup > System Setup > Serial Comms Setup > RS232 or RS422 > Protocol > Intuition.

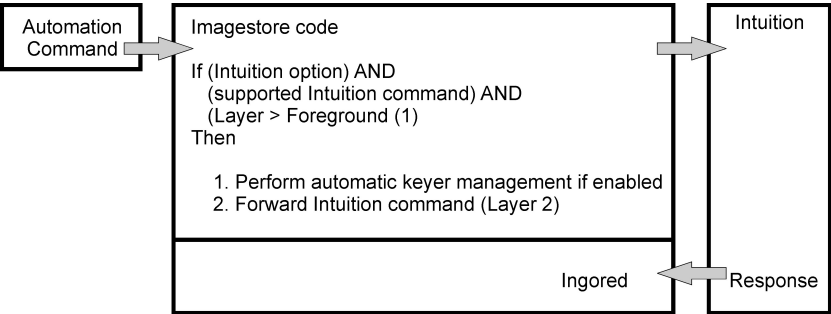
The control port is used to forward selected commands to the Intuition (@19.2k). The commands highlighted below are the ones supported.

ID: 8	Load file no.	File
ID: 9	Save Image	File
ID: G	Set Image Position	File
ID: I	File save mask	File
ID: O	enquire image load	File
ID: P	Enquire File Status	File
ID: R0	Load image	File
ID: R1	Save Image	File
ID: R2	Erase Image	File
ID: 0	Fade to/from black	Keyer
ID: 2	Cut to/from black	Keyer
ID: 1	Fade keyer up or down	Keyer
ID: 3	Cut keyer up/down	Keyer
ID: 4	Set Mask	Keyer
ID: 5	Mask enable/disable	Keyer

ID: A	Erase Store	Keyer
ID: C	Set key source	Keyer
ID: D	Set key linear or full	Keyer
ID: E	Set key normal or invert	Keyer
ID: F	Set clip grain transparency	Keyer

Control

The commands are sent in a ‘fire and forget’ mode to the Intuition. Responses are ignored, thus no processing has to be done via the Imagestore. The purpose of this is so the Imagestore does not have to act like a fully functional automation system while performing its on-air functions.



Automatic Keyer Management

Without automatic keyer management, automation has to drive the Imagestore HDTV / Intuition combination as follows:

- 1) Send a command to load an image on the Intuition (via the Imagestore).

- 2) Perform Load Live on one of the Imagestore Keying layers.
This allows the Intuition output to be fed in to the keying layer.
- 3) Cut up the Imagestore keying layer assigned to load live so the Intuition output is visible.
- 4) Cut up one of the Intuition layers.
Intuition layer now visible
- 5) Cut down one of the Intuition layers
- 6) Cut down the Imagestore layer assigned to load live.
- 7) Turn off load live.

To make automation control of the Intuition easier, there are several menu options which allow you to configure the Imagestore to perform automatic keyer management. These options allow the Imagestore to automatically perform load live, cut up an Imagestore keying layer when it receives a command and to cut up an Intuition layer. Then in reverse, if automation cuts down all intuition layers the Imagestore can cut down the layer it was using and turn off load live.

The Intuition setup menu is found under:

Setup > System Setup > Intuition Setup

Front Panel Menu

There are three menu items:

- Def Keyer Assign (Default Keyer Assign)
- Keyer Release Mode
- Keyer status

Def Keyer Assign

This option enables Automatic Keyer Management which sets the selected keying layer for Intuition control. When the Intuition keyer is cut up the Imagestore HDTV will perform a 'Load Live' on that layer and display the

composited stream. As additional Intuition layers are cut up the Imagestore will continue to display the composited stream.

None

No Automatic Keyer Management set. Imagestore will ignore the Intuition output.

DSK1

Automatic Keyer Management enabled on DSK1 (Midground keyer).

DSK2

Automatic Keyer Management enabled on DSK2 (Foreground keyer).

Keyer Release Mode

This option defines how the keyer is released from Intuition control.

Disabled

Disabled mode leaves the Imagestore keyer cut up when all Intuition keys are cut down.

Enabled

Enabled mode turns off the Imagestore keyer if all Intuition keys are cut down.

Keyer Status

Intuition can combine up to 14 virtual keying layers into its composited output. This menu displays the active layers.



Keyer Management example

Example of what automation has to send to cut up two of layers on the Intuition.

Default Keyer Assign= DSK1 (midground)

Keyer Release = Enabled.

- 1) Cut up one of the Intuition layers.

(Imagestore Performs Load Live on DSK1 (midground layer) and cuts it up if it's not already)

Intuition layer now visible

- 2) Cut up another Intuition Layer

(Imagestore does nothing)

- 3) Cut down one of the Intuition layers

(Imagestore does nothing because there is still one layer active)

- 4) Cut down the final visible intuition layer

(Imagestore cuts down DSK1 (midground layer), and turns off load live)

Pitfalls

The Imagestore HDTV maintains the layer status of the Intuition based on the automation commands it forwards. If the operator changes the layer status of the Intuition using the front panel, the Imagestore HDTV will not be aware of any change and therefore will not be able to perform automatic keyer management correctly. The same is true if the Intuition is controlled by another automation system and not via the Imagestore.

Installation

This section of the User Manual provides a step by step description of the setting up procedures required for integration of Imagestore HDTV into a broadcast system.

Ventilation

Imagestore HDTV is ventilated through its side panels and it is essential that these holes remain clear of any obstruction.

Power Requirements

The unit uses a mains supply input circuit that auto-senses whether the applied AC mains voltage is in the region of 90-132V and 180-264V AC and responds accordingly. The unit is tolerant of both 50Hz and 60Hz AC supplies, and under normal conditions, its power consumption will be approximately 91 watts, peaking to around 94 watts during hard disk access. These figures assume fully specified hardware options (i.e. audio and 2D DVE boards fitted).

A 20mm mains input fuse, rated at 2.5 Amp (slow blow) forms part of the mains connection inlet and is accessible from the rear of the unit.

Environment

The Imagestore HDTV will tolerate operating temperatures in the range 5°C to 50°C with humidity of between 20 and 80%, non-condensing. The unit is more tolerant in storage and may be stored at temperatures ranging from -10°C to +70°C.

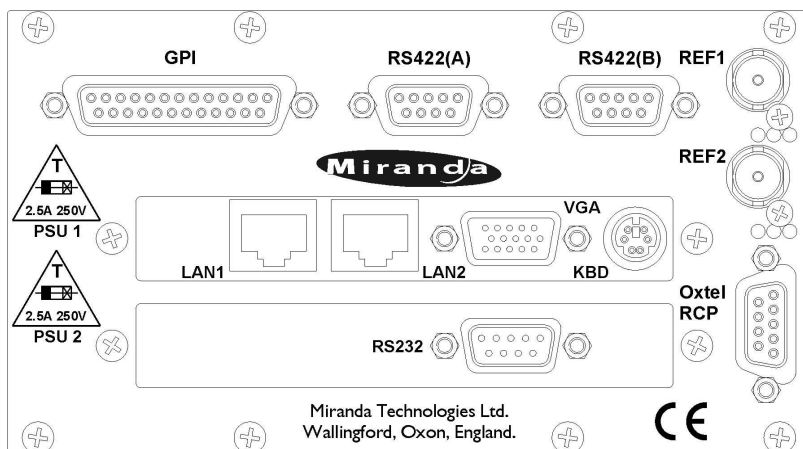
Cabling

Imagestore HDTV has a 2-piece lid to enable the PSU's and disk drives to be accessed without removing the unit from the rack. When cabling up the

system it is recommended to leave approx. 300mm of slack in the cables to draw the unit out of the rack enough to expose the front lid.

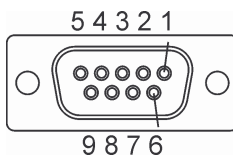
HDTV Rear Panel Connections

PCI Connectors



RS422(A/B)

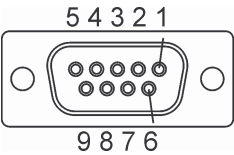
Pin No.	Signal Name RS422
1	Ground
2	TX-
3	RX+
4	Ground
5	Ground
6	Ground
7	TX+
8	RX-
9	Ground



Connector type: 9 pin female D type.

Oxtel RCP

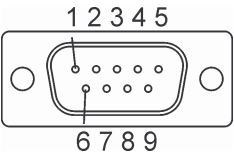
Pin No.	Signal Name
1	Ground
2	RX-
3	TX+
4	Ground
5	Ground
6	Ground
7	RX+
8	TX-
9	+12V



Connector type: 9 pin female D type.

RS232

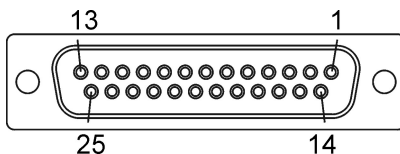
Pin No.	Signal Name RS232
1	DCD
2	RX
3	TX
4	DTR
5	Ground
6	DSR
7	RTS
8	CTS
9	RI



Connector type: 9 pin male D type.

GPI

Pin No	Signal Name
1	LTC_IN -
2	Ground (Static)
3	ANA_IN7
4	ANA_IN5
5	ANA_IN3
6	ANA_IN1
7	+5V
8	+12V
9	GPI8
10	GPI6
11	GPI4
12	GPI2
13	Ground
14	LTC_IN +
15	Ground
16	ANA_IN6
17	ANA_IN4
18	ANA_IN2
19	ANA_IN0
20	REF_RET
21	GPI9
22	GPI7
23	GPI5
24	GPI3
25	GPI1



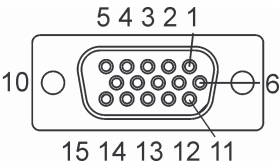
Connector type: 25 pin female D type

VGA and KBD Connections

The VGA and KBD connections are solely for use by the Miranda Technologies Ltd development team and no user functions can be accessed via these ports.

VGA

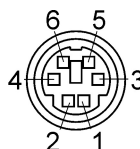
Pin No.	Signal Name
1	Red
2	Green
3	Blue
4	NC
5	Ground
6	Ground
7	Ground
8	Ground
9	NC
10	Ground
11	NC
12	NC
13	H sync
14	V sync
15	NC



Connector type: 15 pin female high density D type

KBD

Pin No.	Keyboard	PS/2 Mouse
1	KBDATA	MSDATA
2	MSDATA	MSDATA
3	GND	GND
4	IOVSB	IOVSB
5	KBCLK	MSCLK
6	MSCLK	MSCLK

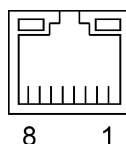


Connector type: 6 pin PS2.

LAN 2

Use LAN 2 (not LAN 1) as the Ethernet connection to the Imagestore HDTV

Pin No.	Signal Name RJ45
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	NC



Connector type: RJ45.

The LAN2 connector has 2 integral LED indicators. The green LED indicated 100Mbps speed and the yellow LED detects 'LINK' and 'ACTIVE' signals.

REF 1 / 2

REF 1 HD Tri-level sync,

REF 2 SD analog sync, LTC or VITC.

Connector type: 75Ω BNC.

Connection of LTC or VITC

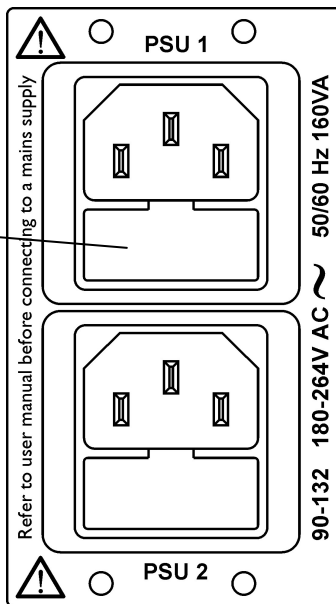
Where linear timecode is provided for Imagestore HDTV it should conform to ANSI/SMPTE standard 12M-1995. The input level should be between one and two volts peak-to-peak.

Mains Input

Imagestore HDTV can have up to 2 130W PSU's fitted, each fed from its own IEC connector.

The PSU's are auto-ranging from 90-132V and 180-264V AC.

Each IEC connector is fused with a 2.5A anti-surge fuse.



HD-SDI source inputs

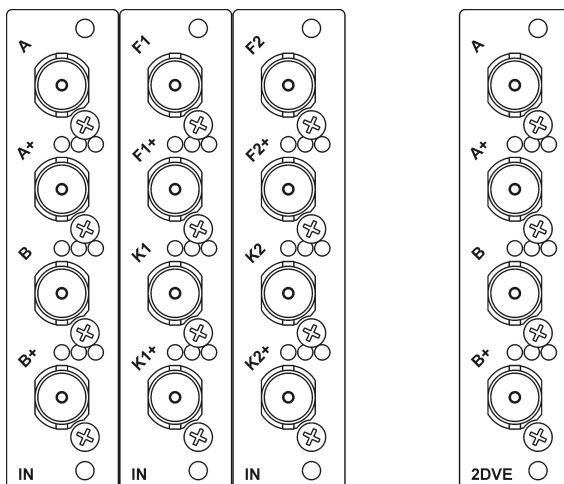
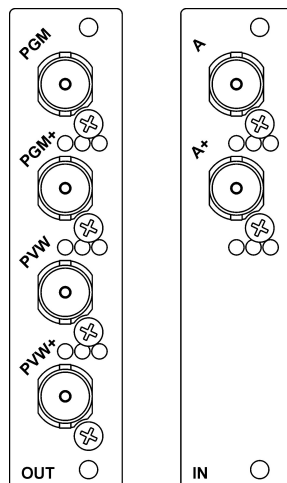
The minimum configuration for an Imagestore HDTV is a single input card and an output card.

Each input / output is via a 75Ω BNC connector.

The + sign represents a copy input or output, therefore PGM + is a copy program output.

Extra cards can be added to the system to give a maximum number of 6 inputs (2 per card). Each card is supplied with a series of labels to enable it to be individually identified.

Input options

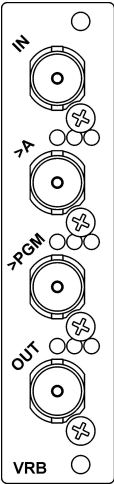


Video Relay Bypass

The mechanical video relay bypass option (VRB-HD-001) may be fitted which routes the main HD-SDI input source through the system in the event of a power failure.

BNC no.	Signal Name
IN	HD-SDI Input
>A	To A input
>PGM	From PGM output
OUT	HD-SDI Output

The board should be placed in the spare slot next to the output card as it derives its power from this card.



Connection of Analogue Faders

Analogue faders may be used to control a main fade, a fade to black and the levels of transparency, gain and clip. A resistive linear potentiometer (a "pot") of at least 10K Ω should have its fixed terminals connected between pin 7 (+5V) and pin 15 (Ground). The variable output of the pot should connect to the appropriate fader input pin.

Screened cable should be used to connect the fader to the Imagestore HDTV. The screen of the cable should be connected to ground only at the Imagestore HDTV end of the cable to avoid "earth loops" and restrict extraneous signal levels to less than 1 mV.

Connection of General Purpose Interfaces (GPI's)

General Purpose Interface ports may be used either to trigger the execution of a series of internal pre-programmed commands (input) or to monitor the status of the Imagestore HDTV (output). The process of assigning command macros to an individual GPI port is described in the Front Panel commands section of this section.

Input to GPI

Ports GPI 1 through GPI 7 can be allocated as either input or output ports, but GPI ports 8 and 9 are only available as inputs. Where a GPI port is used as an input, the command macro may be activated by either connecting or disconnecting the input line to GPI ground (pin 13) depending whether GPI 'on' or GPI 'off' has been assigned.

Output from GPI

A GPI port may be used as an output and its active status, (on), is defined by the output being internally pulled to ground by a "Darlington" configured transistor such that an active low will be represented by +0.7V. Lamps or relays attached to an output GPI may use the GPI +12V supply (pin 8) but the maximum current drawn from this supply should not exceed 500mA.

Where a GPI output is used to drive a relay coil, reverse voltage protection diodes should be incorporated in the circuit to protect the Imagestore from voltage transients.

Audio connections

AES IN (1:8)

The AES input port is used to connect the eight digital AES/EBU audio input channels identified as AES_IN_1 to AES_IN_8. Each input source should be connected to the Imagestore HDTV over two wires using balanced (differential) signals and a grounded shield. Signal and associated pin-out connections are given in the table on page 206.

IS2 Mode AES input connector pin-out

Pin	Signal	Pin	Signal	Comment
24	AES_IN_1 (+)	12	AES_IN_1 (-)	A Input pair 1
25	GND	25	GND	
10	AES_IN_2 (+)	23	AES_IN_2 (-)	A Input pair 2
11	GND	11	GND	
21	AES_IN_3 (+)	9	AES_IN_3 (-)	VO1 Pair 1
22	GND	22	GND	
7	AES_IN_4 (+)	20	AES_IN_4 (-)	VO1 Pair 2
8	GND	8	GND	
18	AES_IN_5 (+)	6	AES_IN_5 (-)	B Input pair 1
19	GND	19	GND	
4	AES_IN_6 (+)	17	AES_IN_6 (-)	B Input pair 2
5	GND	5	GND	

AES IN (9:16)

The second AES input port is used to connect the next eight digital AES/EBU audio input channels.

AES OUT (1:8)

The AES output port provides access to eight digital, AES audio output channels, identified as AES_OUT_1 to AES_OUT_8. Each self-clocking output is available from the Imagestore HDTV over two wires using balanced (differential) signals. Signal grounds are available for connection to cable screens where required. The associated pin-out connections are given in the table on page 207.

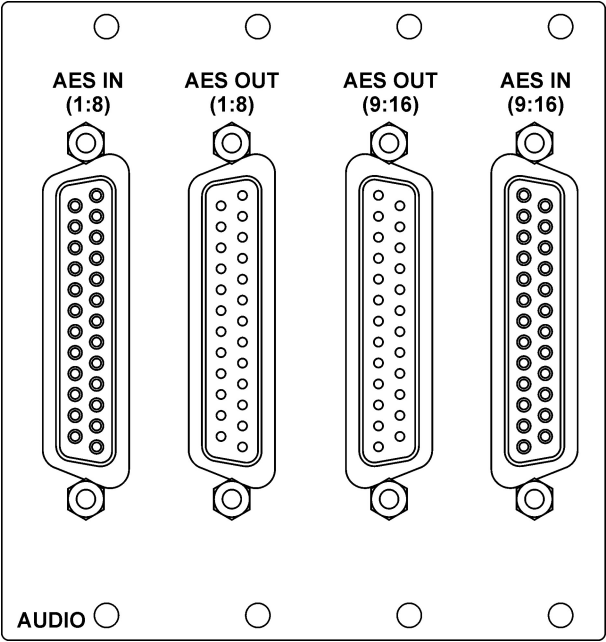
IS2 Mode AES output connector pin-out

Pin	Signal	Pin	Signal	Comment
24	AES_OUT_1 (+)	12	AES_OUT_1 (-)	PVW pair 1
25	GND	25	GND	
10	AES_OUT_2 (+)	23	AES_OUT_2 (-)	PVW pair 2
11	GND	11	GND	
21	AES_OUT_3 (+)	9	AES_OUT_3 (-)	PGM Pair 1
22	GND	22	GND	
7	AES_OUT_4 (+)	20	AES_OUT_4 (-)	PGM Pair 2
8	GND	8	GND	

AES IN (9:16)

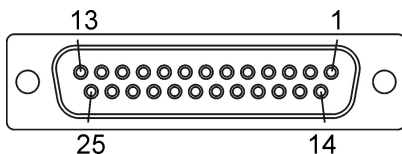
The second AES output port is used to connect the next eight digital AES/EBU output channels.

Rear panel connections



Audio AES IN

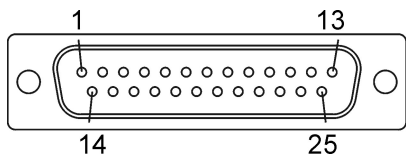
Pin No	Signal Name
1	AES_IN_8+
2	Ground
3	AES_IN_7-
4	AES_IN_6+
5	Ground
6	AES_IN_5-
7	AES_IN_4+
8	Ground
9	AES_IN_3-
10	AES_IN_2+
11	Ground
12	AES_IN_1-
13	Ground
14	AES_IN_8-
15	AES_IN_7+
16	Ground
17	AES_IN_6-
18	AES_IN_5+
19	Ground
20	AES_IN_4-
21	AES_IN_3+
22	Ground
23	AES_IN_2-
24	AES_IN_1+
25	Ground



Connector type: 25 pin female D type

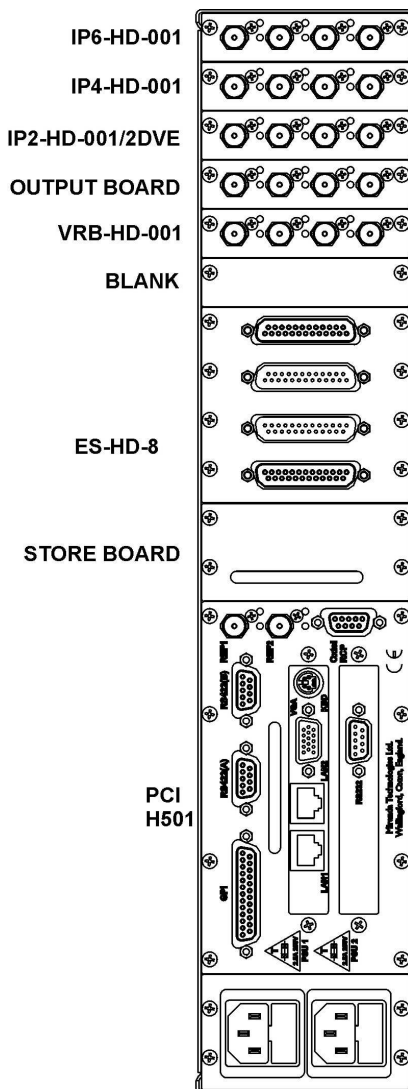
Audio AES OUT

Pin No	Signal Name
1	AES_OUT_8+
2	Ground
3	AES_OUT_7-
4	AES_OUT_6+
5	Ground
6	AES_OUT_5-
7	AES_OUT_4+
8	Ground
9	AES_OUT_3-
10	AES_OUT_2+
11	Ground
12	AES_OUT_1-
13	Ground
14	AES_OUT_8-
15	AES_OUT_7+
16	Ground
17	AES_OUT_6-
18	AES_OUT_5+
19	Ground
20	AES_OUT_4-
21	AES_OUT_3+
22	Ground
23	AES_OUT_2-
24	AES_OUT_1+
25	Ground



Connector type: 25 pin male D type

Rear panel slots



The previous diagram shows the positions of the optional video and audio input boards and the video relay bypass board.

To add or replace a plug in circuit board first switch the unit off by removing both IEC mains leads and remove any cabling necessary for access.

To remove a blanking panel undo the 2 off M3 retaining screw positioned top and bottom.



Observing anti-static handling procedures carefully position the board into the chassis between the upper and lower fixing rails, aligning the base of the printed circuit board into the card guide. Gently push the board into the chassis until the edge connector engages with the connector on the motherboard, taking care not to damage components fitted to the board against adjacent metalwork. Once engaged push firmly so the plate then fits against the rails and the fixing holes align. Refit the M3 fixing screws.

Refit cabling then apply mains.

Support

Product Support

Miranda Technologies' support desk exists to provide timely help and advice to users and telephone support is available for the entire life of the product. The support desk may be contacted at any of the following locations.

Americas

Telephone (9:00am - 9:00pm EST)
+1-800-224-7882
techsupp@miranda.com

Asia

Telephone (9:30am - 5:30pm JST)
+81-3-5730-2987
asiatech@miranda.com

Europe, Middle East, Africa, UK

Telephone (10:00am - 7:00pm CET)
+44 (0) 1491 820222
eurotech@miranda.com

France (only)

Telephone (9:00am - 6:00pm CET)
Telephone: +33 (0) 1 55 86 87 88
francetech@miranda.com

Warranty and Non-Warranty Repairs

Miranda Technologies Ltd provides all products that are sold new with a two-year, return-to-base warranty. Products that are purchased as “ex-demo” may have a limited warranty and reference should be made the original acknowledgement of order or the Product Certificate for warranty details.

A repair service for warranty and non-warranty products provides a typical turnaround time of ten working days. The procedure for returning a unit to Miranda Technologies Ltd is given later in this section.

Obsolescence

Obsolete products will be supported for a minimum of 3 years from the date of obsolescence. Miranda Technologies Ltd will continue to provide support beyond this period, but will not replenish service stock and is therefore unable to guarantee the availability of every component used.

Upgrades

Software upgrades are regularly available as part of a continuing commitment to product improvement. Most software upgrades can be performed remotely and customers are kept informed of software and hardware upgrades via Release Notes that are e-mailed to the nominated contact.

Hardware upgrading is normally carried out at Miranda Technologies Ltd’s factory and involves full re-testing and QA checks. Refurbishment can also be performed where required but these are not covered by the standard warranty.

Service Visits

On-site assistance from an Miranda Technologies Ltd Field Service Engineer will be provided assuming adequate notice is given. Service visits are normally chargeable and are not covered by the standard warranty.

Equipment Loans

A variety of loan agreements are possible and can be arranged with the Engineering Support department through the helpdesk although it is not always possible to fulfil loan requests at short notice.

Training

Customer training can be provided to match individual requirements. Training can be carried out either at customer premises (preferred option) or at Miranda Technologies Ltd's facility in Oxfordshire where a dedicated demonstration room is available.

Courses can be tailored for either technical or operational staff and these courses can be ordered at the same time as the equipment or at any subsequent time.

Web Page

Miranda Technologies Ltd's web page can be found at **www.miranda.com**.

Returns Procedure

Should there be a need to return any Miranda Technologies Ltd product for upgrade or repair, telephone the Helpdesk and request a "return number".

The helpdesk will ask for details of the return including the unit's serial number, reason for return and any fault information. Make sure that these details are to hand when contacting the helpdesk.

Mark the "return number" clearly on any packaging as well as on the return paperwork. Any subsequent correspondence should reference this "return number".

Transit Packaging

When returning equipment ensure that it is adequately packaged using good quality materials. Particularly ensure that the unit is tightly packed within a

strong carton (preferably the original) and avoid common polythene or polystyrene chips, since the product may contain static sensitive devices.

Some components, such as hard drives, may be susceptible to damage by physical shock and caution is required when removing the equipment from racks.

Units received at Miranda Technologies Ltd with obvious damage, not described on the accompanying documentation, or not notified to Miranda Technologies Ltd by the customer, are assumed damaged in transit and this is chargeable. Customers are strongly advised to insure the equipment against damage in transit when returning it to Miranda Technologies Ltd. Should a unit be received from Miranda Technologies Ltd in a damaged state (either new or repaired), this should be reported to both the courier and Miranda Technologies Ltd immediately.

Imagestore Specifications

HD-SDI Inputs and Outputs

The Imagestore HDTV inputs accept serial HD-SDI video streams conforming to the following standards:

- ◆ 1920 x 1080i/59.94 Hz SMPTE 274M 1998
- ◆ 1920 x 1080i/50 Hz SMPTE 274M 1998
- ◆ 1280 x 720/59.94 Hz SMPTE 296M 2001
- ◆ 1280 x 720/50 Hz SMPTE 296M 2001

through screened 75 Ω BNC connectors. There is a Return Loss of < -15dB, over the range 5MHz to 1500MHz. Each input circuit is provided with automatic adaptive equalisation circuitry suitable for cable lengths of at least 80 metres (of Belden 8281 or equivalent coaxial cable).

Both HD-SDI outputs are to the same data structure and physical standard as the inputs and provide output amplitudes of 800mV ($\pm 10\%$).

Imagestore HDTV will delay the video path by no more than one line, excluding any in-circuit DVE delay.

Power Requirements

Imagestore accepts power from a 110V or 230V, 60Hz or 50Hz, AC mains supply. The mains supply input fuse is a T2A5 (2.5Amp Anti-surge) and should always be replaced with a fuse of the same rating.

Interfaces

The Imagestore employs five types of control and image interfaces and a summary of these is given in the following table.

Interface Type	Description
RS422/RS232	Automation serial control interfaces.
Ethernet	Image Loading and Transfer (optional).
Panel	Serial Interface for Remote Control Panel.
GPI's	Nine GPI's with input and output macro editor.
Faders	Seven analogue fader inputs.

Mechanical

The unit is contained within a 2RU chassis with the following mechanical specification.

- Height: 88mm (3.46")
- Width: 482mm (19") with mounting ears, 442mm (17.40") without ears.
- Depth: 444mm(17.48") with rear connectors, 423mm (16.65") without connectors.
- Weight: 9.0kg (19.8lbs) minimum system, 1 PSU, single input card.
- Cooling Forced air via internal fans

Environmental

- Operating temp. 5°C - 40°C
- Storage temp. -10°C - 70°C
- Humidity 20°C - 80°C non-condensing
- An air-conditioned environment is recommended for optimal performance and reliability.

Glossary

ADC	Analogue to Digital Converter
AES	Audio Engineering Society
BGnd	Background
CGT	Clip, Gain and Transparency
DAC	Digital to Analogue Converter
DSK	Down Stream Keyer
EAS	Emergency Alert System
EBU	European Broadcasting Union
En/Dis	Enable or Disable
FDD	Floppy Disk Drive
FG	Foreground
FIFO	First-In-First-Out (a data buffer)
FTB	Fade to Black
GPI	General Purpose Interface
HD-SDI	High Definition Serial Digital Interface (SMPTE 292M)
HDTV	High Definition Television
Hz	Hertz (cycles per second)
JPEG	Joint Photographic Experts Group
LTC	Longitudinal Time Code
Mb/s	Megabits per second (10^6 bits per second)
MG	Midground
MHz	Megahertz (10^6 cycles per second)
mV	Millivolt (10^{-3} volt)
NTSC	Nation Television Standards Committee <i>Colour TV system used in; USA, Canada, Mexico and Japan</i>
PAL	Phase Alternate Line
PCB	Printed Circuit Board

PGM	Programme
PIN	Personal Identification Number
PLL	Phase Locked Loop
PST	Preset
PVW	Preview
RCP	Remote Control Panel
RS422/232	Types of serial data communication standards
SDI	Serial Digital Interface
SMPTE	Society of Motion Picture and Television Engineers
TARGA	Image-file format developed by Truevision Inc.
VFD	Vacuum Florescent Display
VITC	Vertical Interval Time Code

Standard Mixfiles

Introduction

A set of mixfiles are now provided as standard with the Imagestore software and are stored in /etc/mixes. Customised mixfiles may also be added to the Imagestore via the front panel, and these are stored in /home/mixes. The preferred mixfile can be selected via the front panel (see page 96) and this will configure the audio engine the next time the Imagestore is restarted.

Audio functionality can be controlled via automation commands. A small set of commands are used within this appendix. Please refer to the Oxtel Automation Protocol document for more detail of these commands, or contact Oxtel Support for further information.

The following list gives a brief description of each of the standard mixfiles. Mixfiles with the string “epl” in the file name are designed to work with the Easyplay sound clip playout system and will only be available for use on units that have the Easyplay licence installed.

Mixfile Name	Description
is23.mix	One group of AB mixing with group selection (including AES) Dual AES voice-overs Embedded and AES output
is23epl.mix	One group of AB mixing with group selection (including AES) Single AES voice-overs + Easyplay Embedded and AES output
16chn_pass.mix	16 channel embedded pass-through
16chn_AES_pass.mix	16 channel AES pass-through
16chn_AB.mix	16 channel embedded AB mixing

	Dual AES voice overs Embedded output
16chn_AB_eply.mix	16 channel embedded AB mixing Single AES voice over + Easyplay Embedded output
5.1_dualVO.mix	5.1 surround embedded AB mixing Dual AES voice overs Embedded output
5.1_VO_eply.mix	5.1 surround embedded AB mixing Single AES voice over + Easyplay Embedded output
5.1_AES_dualVO.mix	5.1 surround AES AB mixing Dual AES voice overs AES output
5.1_AES_VO_eply.mix	5.1 surround AES AB mixing Single AES voice over + Easyplay AES output
5.1_IntuitionVO.mix	5.1 surround embedded AB mixing 6 channel AES voice over (Intuition+) Embedded output
7.1_dualVO.mix	7.1 surround embedded AB mixing Dual AES voice overs Embedded output
7.1_VO_eply.mix	7.1 surround embedded AB mixing Single AES voice over + Easyplay Embedded output
7.1_AES_eply.mix	7.1 surround AES AB mixing Easyplay (no AES VO)

	AES output
7.1_IntuitionVO.mix	7.1 surround embedded AB mixing 8 channel AES voice over (Intuition+) Embedded output
test_eply.mix	Play currently selected Easyplay file on all embedded and AES channels
testtone_all.mix	Play in-built test tone on all embedded and AES channels

To view the contents of each mixfile, log into the Imagestore web server by typing the IP address of the Imagestore in a web browser connected on the same subnet.

The following table summarises input assignments for each mixfile. Please see page 209 for AES input pin assignments.

Mixfile Name	A Input Physical	A Input # Channels	B Input Physical	B Input # Channels
is23.mix	A Video AES 1–2	4	B Video AES 5–6	4
is23eply.mix	A Video AES 1–2	4	B Video AES 5–6	4
16chn_emb_pass.mix	A Video	16	Not Used	
16chn_AES_pass.mix	AES 1–8	16	Not Used	
16chn_AB.mix	A Video	16	B Video	16
16chn_AB_eply.mix	A Video	16	B Video	16
5.1_dualVO.mix	A Video	6	B Video	6
5.1_VO_eply.mix	A Video	6	B Video	6
5.1_AES_dualVO.mix	AES 1–3	6	AES 4–6	6

5.1_AES_VO_eply.mix	AES 1–3	6	AES 4–6	6
5.1_IntuitionVO.mix	A Video	6	B Video	6
7.1_dualVO.mix	A Video	8	B Video	8
7.1_VO_eply.mix	A Video	8	B Video	8
7.1_AES_eply.mix	AES 1–4	8	AES 5–8	8

The following table summarises voice-over assignments for each mixfile:

Mixfile Name	Num Voice Overs	Easyplay	VO 1 Physical	VO 1 # Channels	VO 2 Physical	VO 2 # Channels
is23.mix	2	No	AES 3	2	AES 4	2
is23eply.mix	1	Yes	Used for Easyplay	2	AES 4	2
16chn_emb_pass.mix	0	No	Not Used		Not Used	
16chn_AES_pass.mix	0	No	Not Used		Not Used	
16chn_AB.mix	2	No	AES 1–4	8	AES 5–8	8
16chn_AB_eply.mix	1	Yes	Used for Easyplay	8	AES 5–8	8
5.1_dualVO.mix	2	No	AES 1	2	AES 2	2
5.1_VO_eply.mix	1	Yes	Used for Easyplay	6	AES 1	2
5.1_AES_dualVO.mix	2	No	AES 7	2	AES 8	2
5.1_AES_VO_eply.mix	1	Yes	Used for Easyplay	6	AES 7	2
5.1_IntuitionVO.mix	1	No	AES 1–3	6	Not Used	
7.1_dualVO.mix	2	No	AES 1	2	AES 2	2
7.1_VO_eply.mix	1	Yes	Used for Easyplay	8	AES 1	2
7.1_AES_eply.mix	0	Yes	Used for Easyplay		Not Used	

The following table summarises output assignments for each mixfile. Please see page 210 for AES output pin assignments.

Mixfile Name	PGM Output Physical	PGM Output # Channels
is23.mix	PGM Video AES 3-4	4
is23epl.y.mix	PGM Video AES 3-4	4
16chn_emb_pass.mix	PGM Video	16
16chn_AES_pass.mix	AES 1-8	16
16chn_AB.mix	PGM Video	16
16chn_AB_epl.y.mix	PGM Video	16
5.1_dualVO.mix	PGM Video	6
5.1_VO_epl.y.mix	PGM Video	6
5.1_AES_dualVO.mix	PGM Video AES 1-3	6
5.1_AES_VO_epl.y.mix	PGM Video AES 1-3	6
5.1_IntuitionVO.mix	PGM Video	6
7.1_dualVO.mix	PGM Video	8
7.1_VO_epl.y.mix	PGM Video	8
7.1_AES_epl.y.mix	PGM Video AES 1-4	8

IS2/3 Emulation Mixfiles

is23.mix & is23epl.y.mix

For the IS2/3 emulation mixfiles, a 'group' refers to a collection of four mono inputs. Mixing occurs between the group currently selected for Program (PGM) and the group selected for Preset (PST). Further still, selectable cross-points for each channel allow mapping of both groups for the mix.

The operation of the IS2/3 emulation mixfiles remains unchanged compared with earlier versions of the Imagestore software. However to improve usability (especially as part of a PresMaster based Master Control environment) the following features are now supported:

Program output meter tracking

Program output meters 5-8 track the master output level.

Voice-over preview meter tracking

Voice-over input previewing tracks the gain applied to the voice-over inputs without the voice-over being on-air.

12 channel pass-through

Embedded audio on groups 2-4 passes through to output groups 2-4 regardless of which input group is active for the AB mix.

Group sensitive previewing

As the active group changes within the audio engine, the input previews track to display the correct inputs.

Note	Due to the way these are implemented within the mixfile interface these features only apply to is2/3 emulation mixfiles.
-------------	---

Pass-through Mixfiles

These mixfiles are intended for use in situations where all audio is being processed externally to the Imagestore. All 16 channels of audio within the SDI stream are routed via the delay banks so that audio is synchronised with video if the Imagestore is providing DVE effects. A separate delay bank is used for each audio group.

16chn_pass.mix

This mixfile is designed for 16 channel embedded pass-through. It collects audio from the A input and outputs it to program, preview and meters 1-16. No gain modification, mutes, shuffles or any form of audio stream manipulation is possible before audio is re-embedded to the output – (other than the delay adjustment to synchronise with video DVE).

16chn_AES_pass.mix

This mixfile is designed for 16 channel AES pass-through. It collects audio from AES inputs 1-8 and outputs it to AES outputs 1-8, preview (embedded) and meters 1-16.

No gain modification, mutes, shuffles or any form of audio stream manipulation is possible before audio is re-embedded to the output – (other than the delay adjustment to synchronise with video DVE).

16 Channel AB Mixfiles

The 16 channel AB mixfiles offer the opportunity to perform full 16–16 audio mixes. All 16 channels are routed via the delay banks, thus allowing for audio to be resynchronised with video if the Imagestore is providing DVE effects. Variants are provided for dual voice over insertion or Easyplay insertion.

The following preview modes are provided:

- Mix preview
- PST input preview

- PGM input preview

All of these modes output audio to the preview output and meters 1-16.

No gain modification, mutes, shuffles or any form of audio stream manipulation is possible before audio is re-embedded to the output – (other than the delay adjustment to synchronise with video DVE).

16chn_AB.mix

This mixfile is designed for 16 channel embedded AB mixing, with dual AES (8 channel) voice overs and embedded output. It collects embedded audio from the A and B inputs for standard AB mixing. Dual voice over insertion is possible on the first 8 channels of the AB mix.

Each voice-over control (i.e. VO 1 pair 1 and VO 2 pair 1) controls an 8 channel voice-over insertion onto the first 8 channels of the embedded output. Both of these voice-overs source their audio from the AES inputs.

The physical voice-over inputs are as follows...

- First voice-over (VO 1 Pair 1 channels 1-8) = AES inputs 1–4
- Second voice-over (VO 2 Pair 1 channels 1-8) = AES inputs 5-8

Note	Please note that these voice-overs were selected to allow for dual voice-over control in a PresMaster master control environment
-------------	---

16chn_AB_eply.mix

This mixfile is designed for 16 channel embedded AB mixing, with single AES voice over plus Easyplay onto embedded output. It collects audio from the A and B inputs for standard AB mixing. All 8 channels of Easyplay can be inserted (on a one-to-one basis) onto the first 8 channels of the AB mix output (controlled by the first voice over). External voice over insertion is also possible on the first 8 channels of the AB mix using AES inputs (controlled by the second voice over).

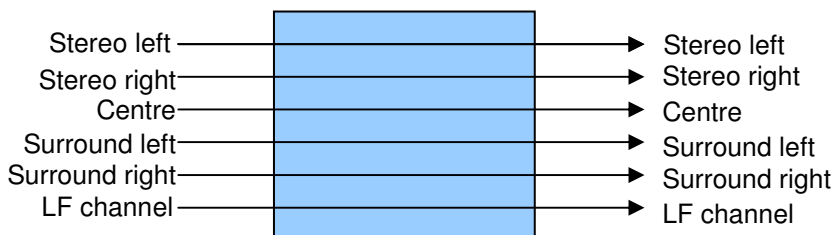
The physical voice-over inputs are as follows...

- Second voice-over (VO 2 Pair 1 channels 1-8) = AES inputs 5-8

5.1 Channel Mixfiles

Introduction

A set of related mixfiles are now provided to cater for 5.1 surround mixing within the Imagestore audio engine. There are variations for AES and embedded mixing, with Easyplay and/or external AES voice-over insertion. All of the 5.1 mixfiles use the channel ordering presented below:



Mix Modes

To provide the maximum level of flexibility for 5.1 surround sound, three common mix modes are provided for the Imagestore audio engine. These mix modes allow a variety of common tasks to be performed by the dynamic reconfiguration of the audio engine via the input select automation command, substituting the “group” number with the mix mode number. The shuffles required to tweak each mix mode can be triggered from a number of sources including automation, the front panel, a PresMaster and GPI macros.

Please see page 232 for more detail.

Versatile Voice-over Shuffling

The majority of voice-overs in a surround-sound environment are performed onto the stereo left, stereo right and centre outputs. To provide the maximum level of flexibility for users, the voice-over shuffle matrix will allow free mapping of each voice-over input onto the left, right and centre outputs. These mixfiles have been designed to be as compatible as possible with the PresMaster master control system. Easyplay versions of the 5.1 mixfiles offer

voice-over control via VO2. Dual voice-over versions offer independently controllable voice-overs on both VO1 and VO2. In addition to the PresMaster control, the shuffles required to manipulate each of the voice-over effects can be triggered from sources such as automation and GPI macros. The Easyplay versions of the mixfiles allow six Easyplay channels to be inserted onto the output of the AB mixer via voice-over 1.

Preview Modes and Metering

Preview modes enable monitoring of different stages of the audio stream from input to final output. This monitoring can be audible (via the preview output) and visual (via audio metering). Using the first two groups of the preview output and meters 1-8, the 5.1 surround mixfiles offer the following preview modes:

- Mix preview
- PST input preview
- PGM input preview
- VO1 mix / Easyplay preview
- VO2 mix preview

Delay Banks for DVE Compensation

As with all mixfiles for the Imagestore, delay banks are available to allow for the propagation delay introduced by a DVE effect. As with other mixfiles, each group of output channels is given its own delay bank of four channels. Details about how to adjust these delays is provided in the Automation Protocol Document available from the Miranda Technologies website.

10 Channel Pass-through

The remaining channels of embedded audio are passed through to allow for other content (e.g. DolbyE streams and alternate languages) to be embedded on the program output via the delay banks. It is also possible to route a copy of the pass-through audio to the preview outputs by using preview mode 8.

Note	Preview mode 8 is not part of the standard preview modes but can be activated (using the automation or GPI) with the ' j6 ' command:
-------------	---

j608:

5.1 Mixfile Variants

The following variants of 5.1 surround mixfile ship as standard with the Imagestore software. The names are as will appear on the front panel.

5.1_dualVO.mix

This mixfile is designed for 5.1 surround embedded AB mixing with dual AES voice-over onto embedded output. It collects audio from the first 6 channels of the A and B inputs and mixes these to the program output, incorporating dual voice-over insertion. Both voice-overs use the dual voice-over matrix described later in this document. Voice-over 1 is on AES input pair 1 and voice-over 2 is sourced from AES input pair 2.

5.1_VO_ely.mix

This mixfile is designed for 5.1 surround embedded AB mixing with single AES voice-over plus Easyplay onto embedded output. It collects audio from the first six channels of the A and B inputs, and mixes these to the program output. In addition six channels of Easyplay can be inserted on a one-to-one basis onto the first six channels of the AB mix output, and this is controlled by the first voice-over. External voice-over insertion is also possible on the first six channels of the AB mix. This uses inputs from AES input pair 1 and is controlled by the second voice-over.

5.1_AES_dualVO.mix

This mixfile is designed for 5.1 surround AES AB mixing with dual AES voice-overs onto AES output. It collects audio from AES input pairs 1-3 for the A input channels, and AES input pairs 4-6 for the B input channels. The mixfile provides 5.1 AB mixing onto AES outputs 1-3. Both voice-overs use the dual voice-over matrix described later in this document. Voice-over 1 is on AES input pair 7, and voice-over 2 is sourced from AES input pair 8.

5.1_AES_VO_eply.mix

This mixfile is designed for 5.1 surround AES AB mixing with single AES voice-over and Easyplay onto AES output. It collects audio from AES input pairs 1-3 for the A input channels, and AES input pairs 4-6 for the B input channels. All 8 channels of Easyplay can be inserted on a one-to-one basis onto the first 8 channels of the AB mix output, and this is controlled by the first voice-over. External voice-over insertion is also possible on the first 8 channels of the AB mix, and this is controlled by voice-over 2 which sources its inputs from AES input pair 7. The output of the AB mixing is routed to AES outputs 1-3.

5.1_IntuitionVO.mix

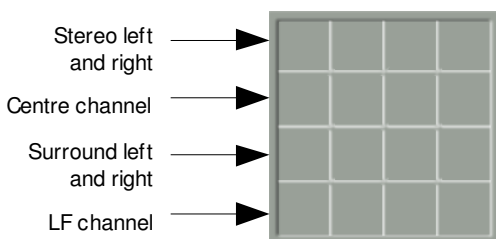
This mixfile is designed for 5.1 surround embedded AB mixing with a single 6 channel voice-over insertion onto embedded output. It collects audio from the first six channels of the A and B inputs, and mixes these to the program output, incorporating a single 6-channel voice-over insertion. Physical inputs for the voice-over are on AES inputs 1-3. The voice-over is specifically tailored towards receiving audio input from an Intuition+.

5.1 Mix Modes

Mode 1: Standard 5.1 AB mix

In this mix mode the first 6 channels of each of the embedded inputs (or the first 6 AES inputs) are mixed in a direct one-to-one relationship as shown on page 229.

The four input and output bunches have been mapped to allow for independent gain control and muting as follows...

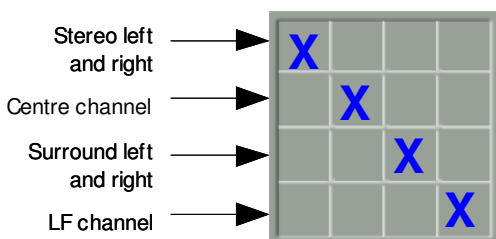


When using the group select command to change the active mode of this mixfile all four inputs must be switched. Failure to do this will result in undesired behaviour or silence. The automation commands required to set the Imagestore to this mix mode are as follows:

PGM input:	j01510:	j01520:
PST input:	j03510:	j03520:

The 'jg' automation command should now be used to set up the default shuffles in the matrix. Each command sets one crosspoint.

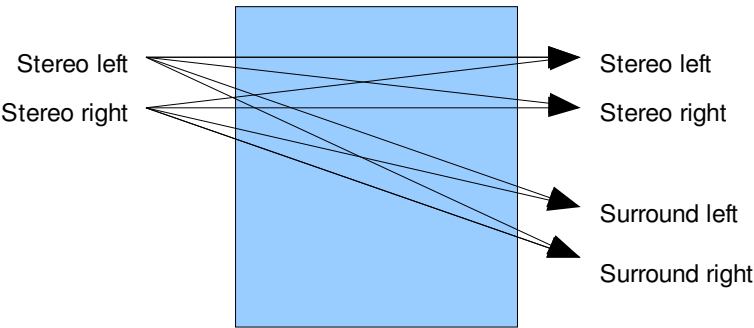
PGM input:	jg101:	jg112:	jg124:	jg138:
PST input:	jg301:	jg312:	jg324:	jg338:



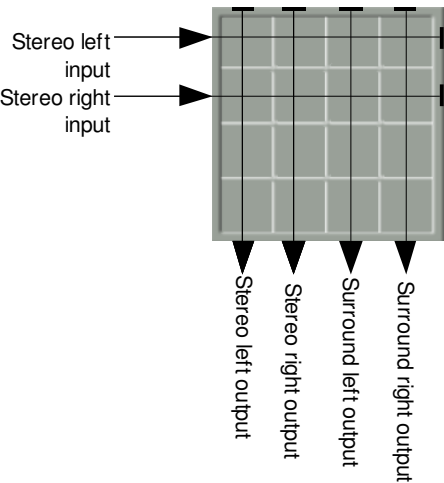
Note: The above diagram shows the only permitted shuffle configuration for this mix mode.

Mode 2: Left and Right Copy

In this mix mode any stereo input can be routed to any stereo output or to any surround stereo output. The routing possibilities are shown below:



The four input and output bunches have been mapped to allow for independent gain control and muting as follows:



When using the group select command to change the active mode of this mixfile all four inputs must be switched. Failure to do this will result in undesired behaviour or silence. The automation commands required to set the Imagestore to this mix mode are as follows:

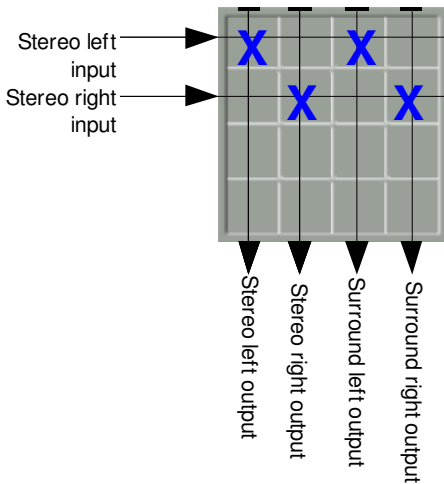
PGM input:	j01512:	j01522:
PST input:	j03512:	j03522:

The ‘**jpg**’ automation command should now be used to set up the shuffles in the matrix. First it is prudent to clear any existing shuffles to prevent any undesired effects:

PGM input:	jpg100:	jpg110:	jpg120:	jpg130:
PST input:	jpg300:	jpg310:	jpg320:	jpg330:

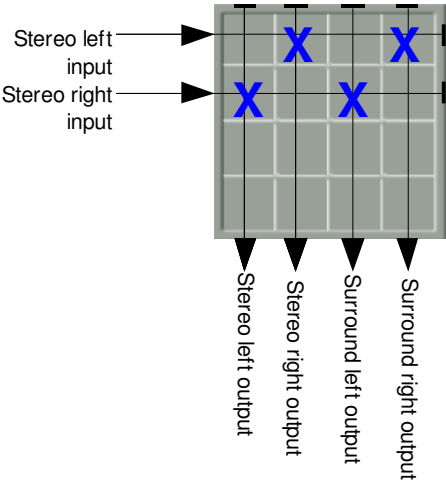
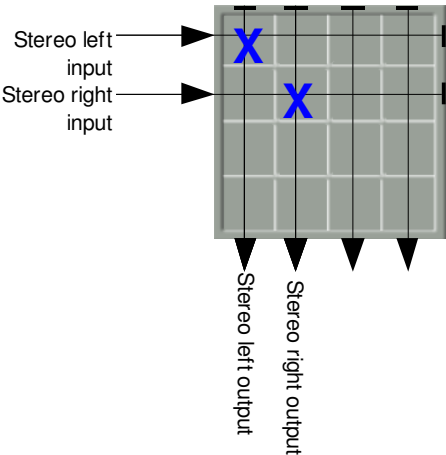
Next the crosspoints in the matrix are set. The following commands set the shuffle configuration for the diagram below, giving left to left, left to surround left, right to right, and right to surround right.

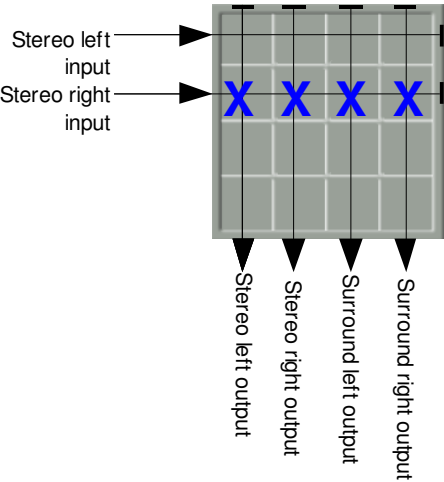
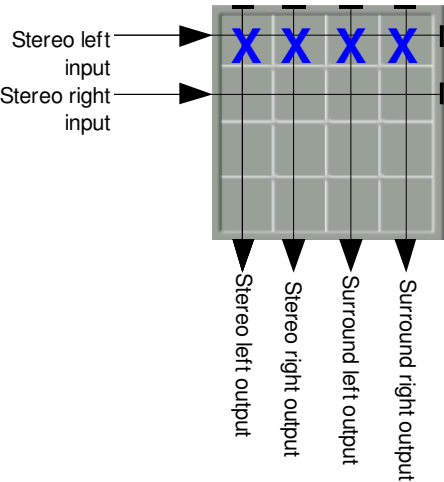
PGM input:	jpg105:	jpg11a:
PST input:	jpg305:	jpg31a:



The following diagrams give examples of further shuffles that may be set up within this mix mode:

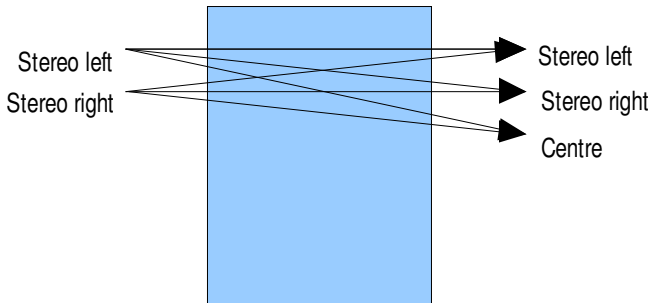
- left to left, right to right
- left to right, left to surround right, right to left, right to surround left
- left to all outputs (mono left)
- right to all outputs (mono right)



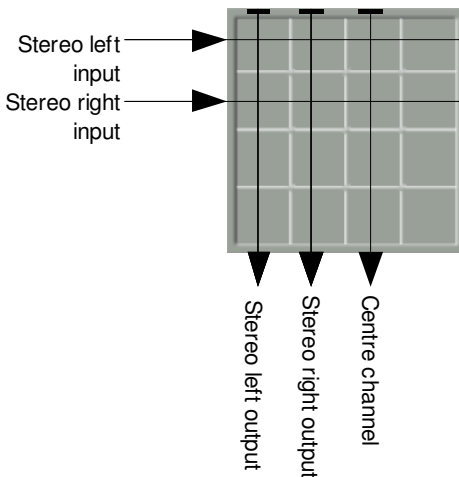


Mode 3: Left, Right and Centre Copy

In this mix mode any stereo input can be routed to any stereo output or to the centre output channel. An example use-case for this facility is during advertising breaks when the left and right audio needs to be summed onto the centre channel. The routing possibilities are shown below.



The four input and output bunches have been mapped to allow for independent gain control and muting as follows:



When using the group select command to change the active mode of this mixfile all four inputs must be switched. Failure to do this will result in

undesired behaviour or silence. The automation commands required to set the Imagestore to this mix mode are as follows:

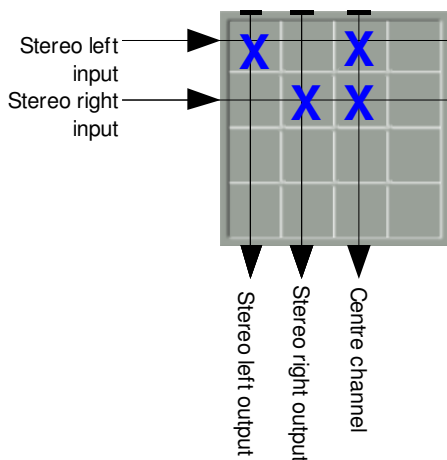
PGM input:	j01514	j01524:
PST input:	j03514:	j03524:

The ‘**jpg**’ automation command should now be used to set up the shuffles in the matrix. First it is prudent to clear any existing shuffles to prevent any undesired effects:

PGM input:	jpg100:	jpg110:	jpg120:	jpg130:
PST input:	jpg300:	jpg310:	jpg320:	jpg330:

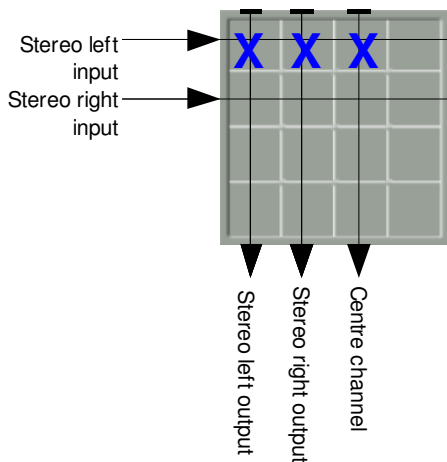
Next the crosspoints in the matrix are set. The following commands set the shuffle configuration for the diagram below, giving left to left, left to centre, right to right, and right to centre.

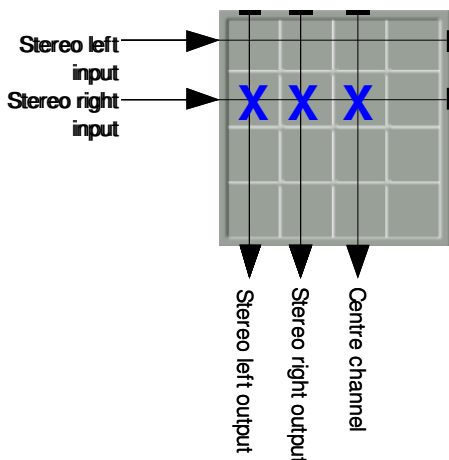
PGM input:	jpg105:	jpg116:
PST input:	jpg305:	jpg316:



The following diagrams give examples of further shuffles that may be set up within this mix mode:

- left to left, left to right, left to centre (mono left)
- right to left, right to right, right to centre (mono right)



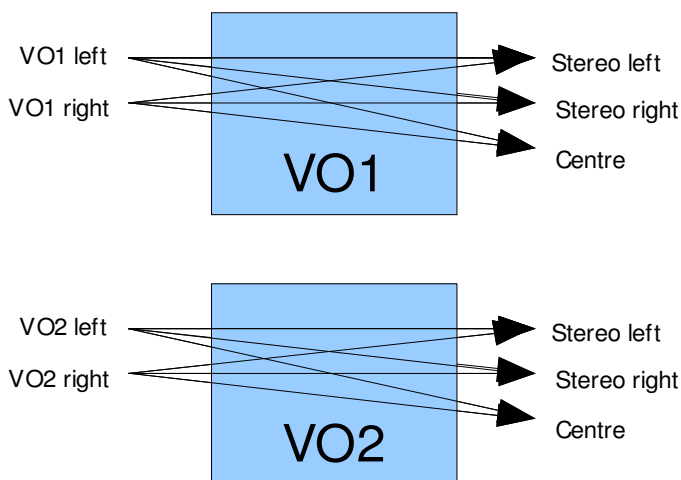


5.1 Mixfile Voice-over Topology and Operation

The 5.1 mixfiles use a consistent voice over topology to enable easy control of both Easyplay and external VO insertion. However, there is an important distinction between configurations for dual external VO, Easyplay with single external VO, and 6-channel external VO (Intuition+) insertion which are presented below. The physical inputs used for each of the variants are detailed on page 229. The depiction of the audio matrix used here is in-line with that presented for VO control in the PresMaster GUI because they are designed to be compatible with this system.

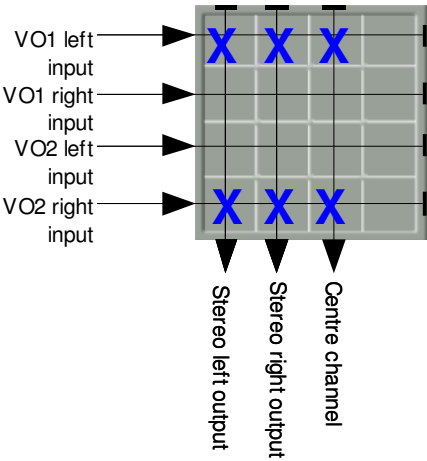
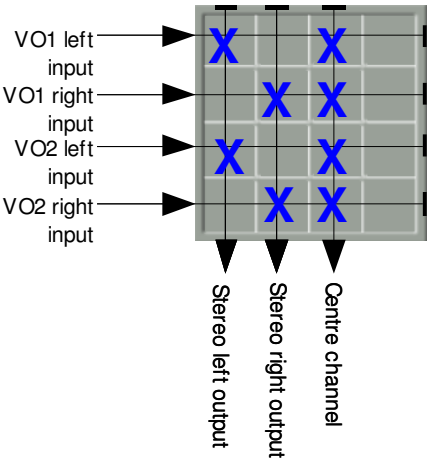
Dual External Voice-overs

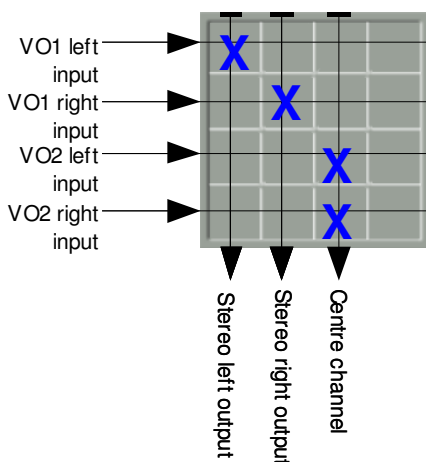
The possible mapping schemes of inputs for VO1 and VO2 are shown in the two following diagrams:



A small selection of possible shuffle possibilities are presented below:

- left to left, left to centre, right to right, right to centre (VO1 & VO2)
- left to left, left to right, left to centre (VO1), right to left, right to right, right to centre (VO2)
- left to left, right to right (VO1), left to centre, right to centre (VO2)





Voice-over shuffles are easily configurable via automation, GPI or the PresMaster GUI. Below is an example of setting a VO shuffle via automation:

First it is prudent to clear any existing shuffles to prevent any undesired effects.

```
jg200: jg210: jg220: jg230:
```

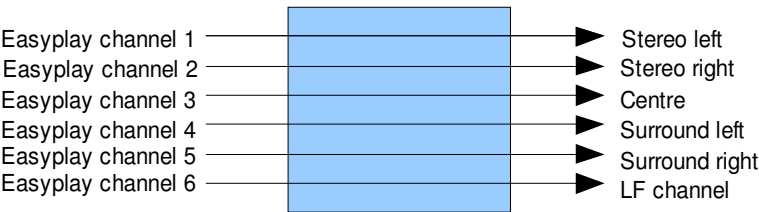
Next the crosspoints in the matrix are set. The following commands set the shuffle configuration shown in the previous diagram.

```
jg201: jg212: jg224: jg234:
```

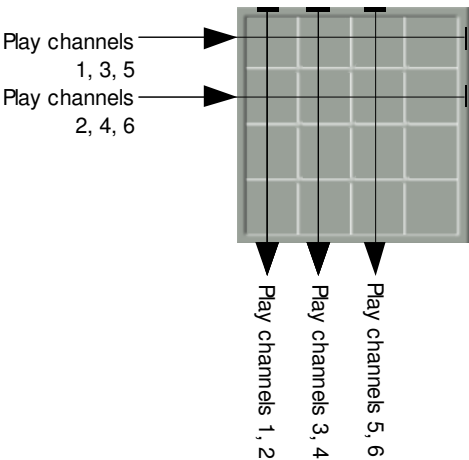
Easyplay and External Voice-over

The shuffles for VO1 (in the dual external voice-over case) are now replaced by Easyplay. However, the one remaining external voice-over uses an identical mapping to that described for VO2 in the preceding section.

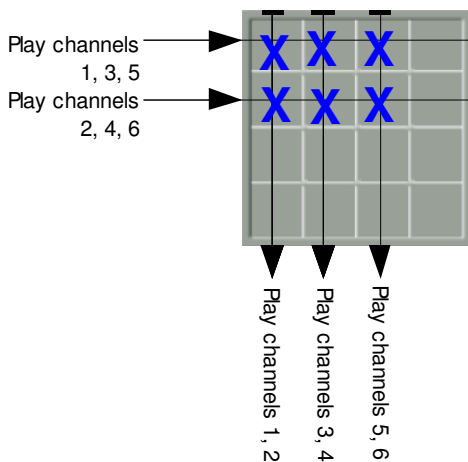
The mapping of Easyplay channels to outputs is shown below:



The input bunch mapping is as follows:

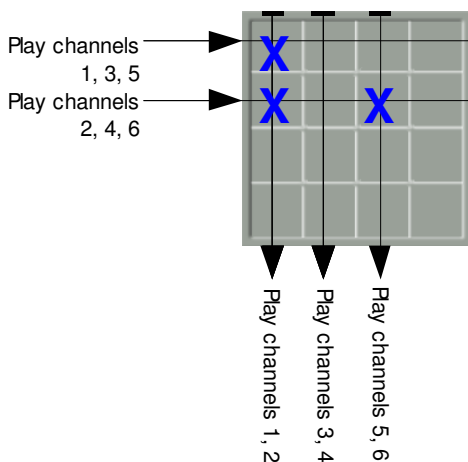


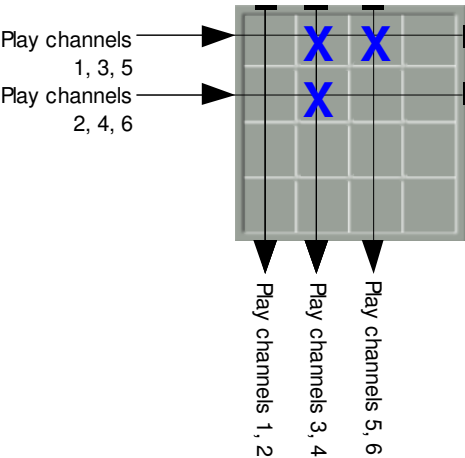
Note that six crosspoints in the VO1 portion of the matrix are used to enable/disable each Easyplay channel. The cross-points required to activate all Easyplay channels are shown below:



Examples of different Easyplay configurations are shown in the following diagrams:

- Easyplay left, right, LF (channels 1, 2, 6)
- Easyplay centre, surround left, surround right (channels 2, 4, 5)





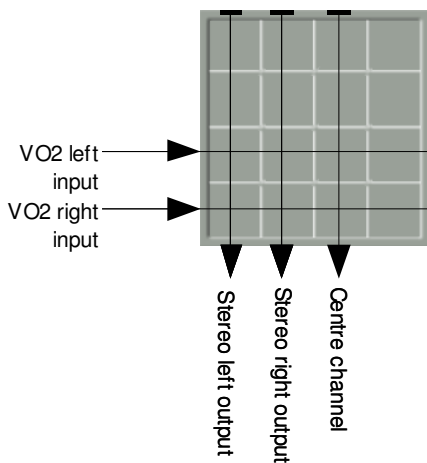
Following is an example of setting an Easyplay shuffle via automation. First it is prudent to clear any existing shuffles to prevent any undesired effects.

```
jg200:      jg210:
```

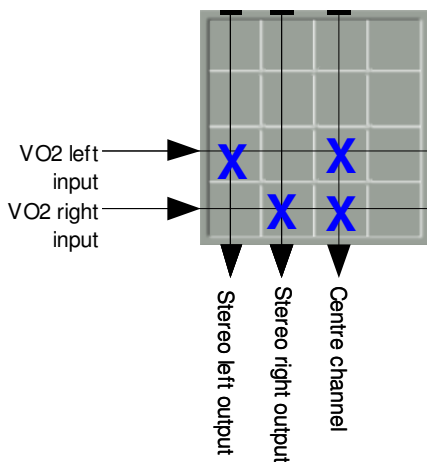
Next the crosspoints in the matrix are set. The following commands set the shuffle configuration shown in the previous diagram.

```
jg206:      jg212:
```

The external voiceover uses a different mapping:



An example shuffle for the mapping above is illustrated below, giving left to left, right to right, left and right summed to centre.



Note For other examples of VO2 shuffles please refer to the previous section. The physical inputs used for this voice-over vary depending on which mixfile variant is in use. See page 229 for more details

Following is an example of setting the shuffle for the external voice-over via automation. First it is prudent to clear any existing (VO2) shuffles taking care not to accidentally disable the shuffles that modify Easyplay.

jg220: jg230:

Next the default crosspoints in the matrix are set. The following commands set the shuffle configuration shown in the previous diagram.

jg225: jg236:

6-channel External Voice-over (Intuition+)

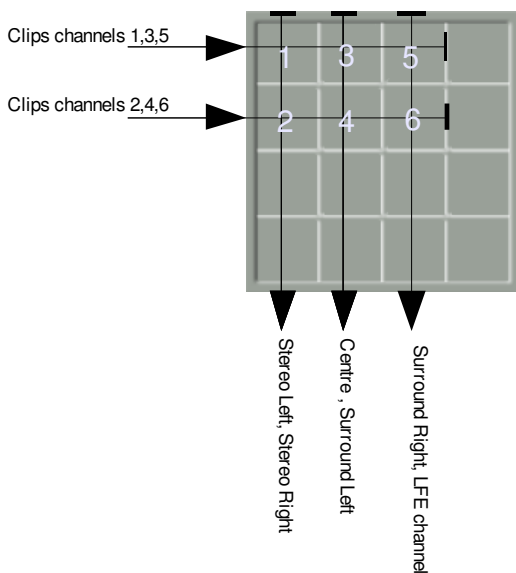
This option allows for 5.1 surround external voice-over insertion. This is particularly tailored towards receiving audio input from an Intuition+.

The topology for control of the 6-channel voice-over (VO1) is similar to that used for Easyplay mixfile variants, with control possible on a per-channel basis. Due to lack of physical inputs, there is no second external voice-over (VO2) in this mode.

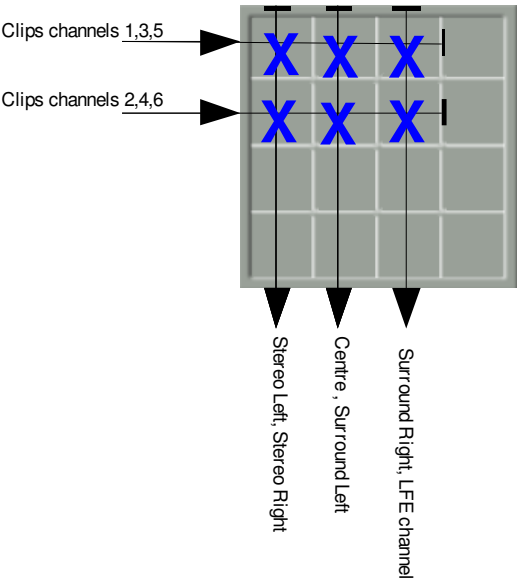
The mapping of external AES channels is shown below:



The input bunch mapping is as follows:



Note that six crosspoints in the VO1 portion of the matrix are used to enable/disable each external channel. The cross-points required to activate all Easyplay channels are shown below:



Since an Intuition template can control each audio channel input, it is likely that all six channels will set active for the majority of the time.

Following is an example of setting the shuffle for the external voice-over via automation. First it is prudent to clear any existing shuffles to prevent any undesired effects.

```
jg200:      jg210:      jg220:      jg230:
```

Next the default crosspoints in the matrix are set. The following commands set the shuffle configuration shown in the previous diagram.

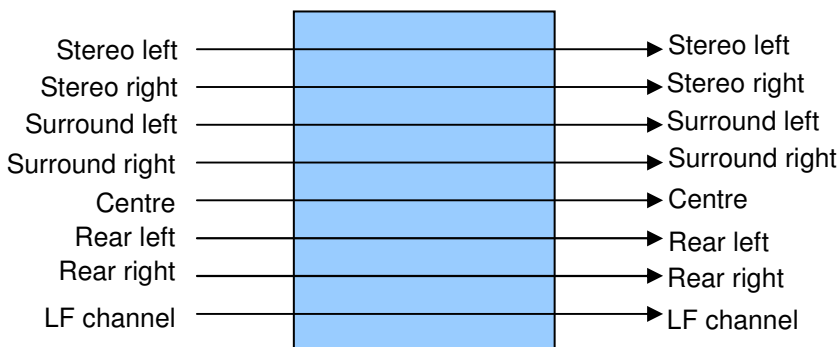
```
jg207:      jg217:
```

Note It is not recommended to use VO preset level unless this is desired globally for the VO. This is because each input bunch to the voice-over is used to represent three input channels, whereas each output bunch is used to represent two channels.

7.1 Channel Mixfiles

Introduction

A set of related mixfiles are now provided to cater for 7.1 surround mixing within the Imagestore audio engine. There are variations for AES and embedded mixing, with Easyplay and/or external AES voice-over insertion. All of the 7.1 mixfiles use the channel ordering presented below:



It is worth noting that the AES variant of the 7.1 mixfiles does not offer dual voice-overs. This is due to the physical limitation of AES input channels.

Mix Modes

To provide the maximum level of flexibility for 7.1 surround sound, three common mix modes are provided for the Imagestore audio engine. These mix modes allow a variety of common tasks to be performed by the dynamic reconfiguration of the audio engine via the input select automation command, substituting the group number with the mix mode number. The shuffles

required to tweak each mix mode can be triggered from a number of sources including automation, the front panel, a PresMaster and GPI macros.

Please see page 256 for more details.

Versatile Voice-over Shuffling

The voice-over shuffling for 7.1 surround mixfiles operates in the same way as the voice-over shuffling for 5.1 surround mixfiles (see page 229). The only difference occurs with Easyplay mixfile variants since it is possible to toggle all eight channels of Easyplay.

Preview Modes and Metering

Preview modes enable monitoring of different stages of the audio stream from input to final output. This monitoring can be audible (via the preview output) and visual (via audio metering). Using the first two groups of the preview output and meters 1-8, the 7.1 surround mixfiles offer the same previewing modes as the 5.1 surround mixfiles...

- Mix preview
- PST input preview
- PGM input preview
- VO 1 mix / Easyplay preview
- VO 2 mix preview

Delay Banks for DVE Compensation

As with all mixfiles for the Imagestore, delay banks are available to allow for the propagation delay introduced by a DVE effect. As with other mixfiles, each group of output channels is given its own delay bank of four channels. Details about how to adjust these delays is provided in the Automation Protocol Document available from the Miranda Technologies website.

8 Channel Pass-through

The remaining channels of embedded audio are passed through to allow for other content (e.g. DolbyE streams and alternate languages) to be embedded on the program output via the delay banks. It is also possible to route a copy of the pass-through audio to the preview outputs by using preview mode 8.

Note	Preview mode 8 is not part of the standard preview modes but can be activated (using the automation or GPI) with the ' j6 ' command: j608:
-------------	---

7.1 Mixfile Variants

The following variants of 7.1 surround mixfile ship as standard with the Imagestore software. The names are as will appear on the front panel.

7.1_dualVO.mix

This mixfile is designed for 7.1 surround embedded AB mixing with dual AES voice-over onto embedded output. It collects audio from the first 8 channels of the A and B inputs and mixes these to the program output, incorporating dual voice-over insertion. Both voice-overs use the dual voice-over matrix described later in this document. Voice-over 1 is on AES input pair 1 and voice-over 2 is sourced from AES input pair 2.

7.1_VO_eply.mix

This mixfile is designed for 7.1 surround embedded AB mixing with single AES voice-over plus Easyplay onto embedded output. It collects audio from the first eight channels of the A and B inputs, and mixes these to the program output. In addition eight channels of Easyplay can be inserted on a one-to-one basis onto the first eight channels of the AB mix output, and this is controlled by the first voice-over. External voice-over insertion is also possible on the first eight channels of the AB mix. This uses inputs from AES input pair 1 and is controlled by the second voice-over.

7.1_AES_eply.mix

This mixfile is designed for 7.1 surround AES AB mixing with single Easyplay (no AES voice-over) onto AES output. It collects audio from AES input pairs 1-4 for the A input channels, AES input pairs 5-8 for the B input channels. All eight channels of Easyplay can be inserted on a one-to-one basis onto the first eight channels of the AB mix output, and this is controlled by the first voice-over. External voice-over insertion is not possible since all

AES inputs are used for the A and B inputs. The output of the AB mixing is routed to AES outputs 1-4.

7.1_IntuitionVO.mix

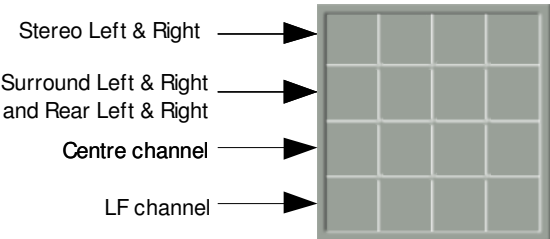
This mixfile is designed for 7.1 surround embedded AB mixing with a single 8 channel voice-over insertion onto embedded output. It collects audio from the first eight channels of the A and B inputs, and mixes these to the program output, incorporating a single 8-channel voice-over insertion. Physical inputs for the voice-over are on AES inputs 1-4. The voice-over is specifically tailored towards receiving audio input from an Intuition+.

7.1 Mixfile Modes

Mode 1: Standard 7.1 AB mix

In this mix mode the first 8 channels of each of the embedded inputs (or the first 8 AES inputs) are mixed in a direct one-to-one relationship as shown on page 253.

The four input and output bunches have been mapped to allow for independent gain control and muting as follows...



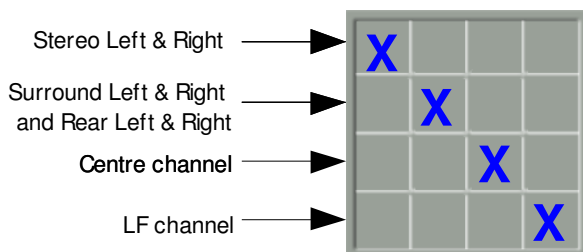
When using the group select command to change the active mode of this mixfile all four inputs must be switched. Failure to do this will result in undesired behaviour or silence. The automation commands required to set the Imagestore to this mix mode are as follows...

PGM input:	j01510:	j01520:
------------	---------	---------

PST input:	j03510:	j03520:
------------	---------	---------

The 'jg' automation command should now be used to set up the default shuffles in the matrix. Each command sets one crosspoint.

PGM input:	jg101:	jg112:	jg124:	jg138:
PST input:	jg301:	jg312:	jg324:	jg338:



Note: The above diagram shows the only permitted shuffle configuration for this mix mode.

Mode 2: AB Mix Left and Right Copy

In this mix mode any stereo input can be routed to any stereo output or to any surround stereo output. This is functionally identical to 5.1 surround mix mode 2. Please refer to page 234 for further details.

Mode 3: Left, Right and Centre Mix

In this mix mode any stereo input can be routed to any stereo output or to the centre output channel. This is functionally identical to 5.1 surround mix mode 2. Please refer to page 239 for further details.

7.1 Mixfile Voice-over Topology and Operation

The 7.1 mixfiles use a consistent voice over topology to enable easy control of both Easyplay and external VO insertion. However, there is an important distinction between configurations for dual external VO, Easyplay with single external VO, and 8-channel external VO (Intuition+) insertion. The physical inputs used for each of the variants are detailed on page 253. The depiction of the audio matrix used here is in-line with that presented for VO control in the PresMaster GUI because they are designed to be compatible with this system.

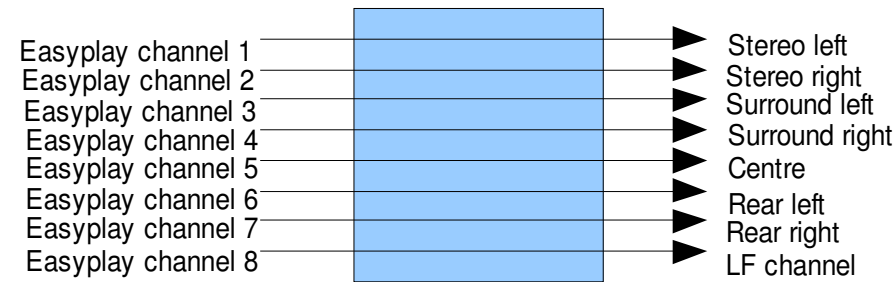
Dual External Voice-over

The dual external voice-over mapping is identical to the 5.1 surround equivalent. For full details please refer to page 242.

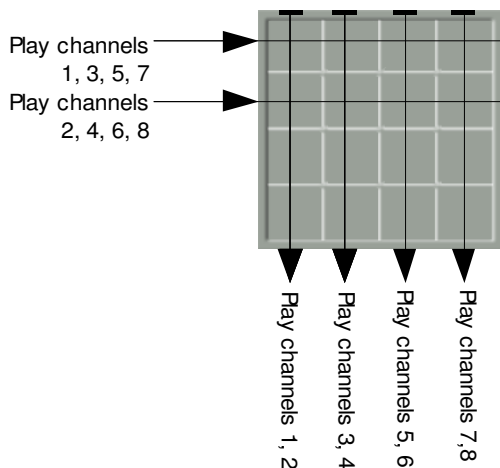
Easyplay and External Voice-over

The shuffles for VO1 (in the dual external voice-over case) are now replaced by Easyplay. However, the external voice-over uses an identical mapping to that described for VO2 in the preceding section.

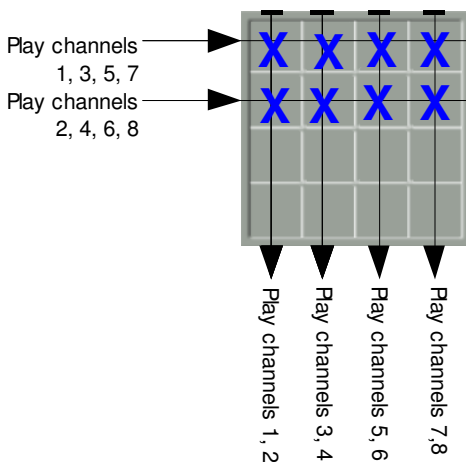
The mapping of Easyplay channels to outputs is shown below:



The input bunch mapping is as follows:



Note that eight crosspoints in the VO1 portion of the matrix are used to enable/disable each Easyplay channel. The cross-points required to activate all Easyplay channels are shown below.



Following is an example of setting an Easyplay shuffle via automation. First it is prudent to clear any existing shuffles to prevent any undesired effects.

jg200: jg210:

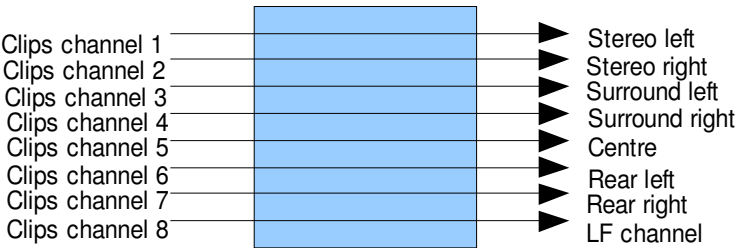
Next the crosspoints in the matrix need to be set. The following commands set the shuffle configuration shown in the previous diagram.

jg20f: jg21f:

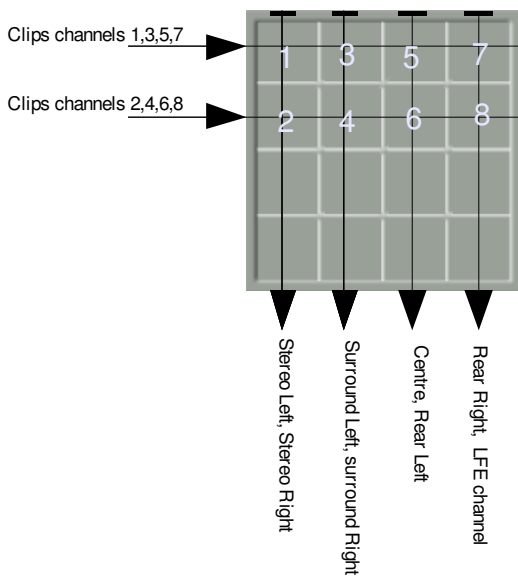
8-channel External Voice-over (Intuition+)

This option allows for 7.1 surround external voice-over insertion. This is particularly tailored towards receiving audio input from an Intuition+. The topology for control of the 6-channel voice-over (VO1) is similar to that used for Easyplay mixfile variants, with control possible on a per-channel basis. Due to lack of physical inputs, there is no second external voice-over (VO2) in this mode.

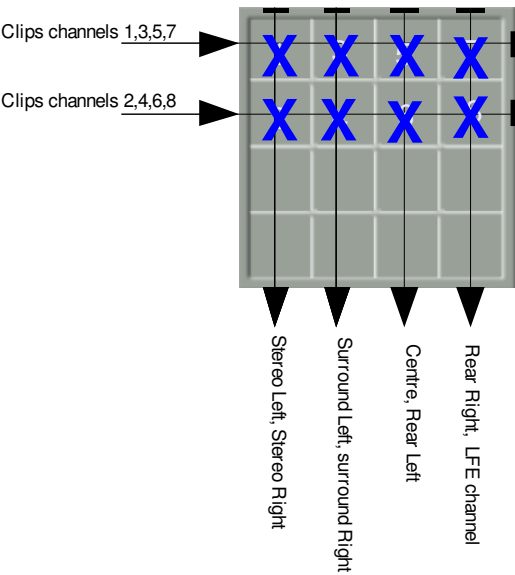
The mapping of external AES channels is shown below:



The input bunch mapping is as follows:



Note that eight crosspoints in the VO1 portion of the matrix are used to enable/disable each external channel. The cross-points required to activate all Easyplay channels are shown below:



Since an Intuition template can control each audio channel input, it is likely that all eight channels will set active for the majority of the time.

Following is an example of setting the shuffle for the external voice-over via automation. First it is prudent to clear any existing shuffles to prevent any undesired effects.

```
jg200:      jg210:      jg220:      jg230:
```

Next the default crosspoints in the matrix are set. The following commands set the shuffle configuration shown in the previous diagram.

```
                jg20f:      jg21f:
```

Note	It is not recommended to use VO preset level unless this is desired globally for the VO. This is because each input bunch to the voice-over is used to represent four input channels, whereas each output bunch is used to represent two channels.
-------------	--

Test Mixfiles

The test mixfiles are useful during audio trouble-shooting and system configuration. They should not be used when on-air.

test_ely.mix

This mixfile is designed to play the current Easyplay file out of the first eight channels of embedded program outputs, preview outputs, and AES channels.

testtone_all.mix

This mixfile is designed to emit a 1 kHz sine wave onto all possible output channels (program, preview and AES). There is no input source for this mixfile.

Please note that the testtone will play out at 0 dBFS (+18 dBu) which is considerably louder than normal program levels. To avoid damage to loudspeakers it is advised to back them off a little before using this mixfile.

Software Update

This software update procedure requires two files: a ZIP file (ishd-update-v6.zip) and a CPIO archive ([ishd-1.13.6.cpio](#)). The ZIP file will be used to create a bootable floppy disk containing the HTTP server, and the CPIO archive will provide the software update when the Imagestore is booted from the floppy disk.

Create Bootable Floppy from Update ZIP File

This ZIP file is used to create a bootable floppy that contains a HTTP server. There are two methods for creating this dependent upon the version of software that is currently running on the Imagestore:

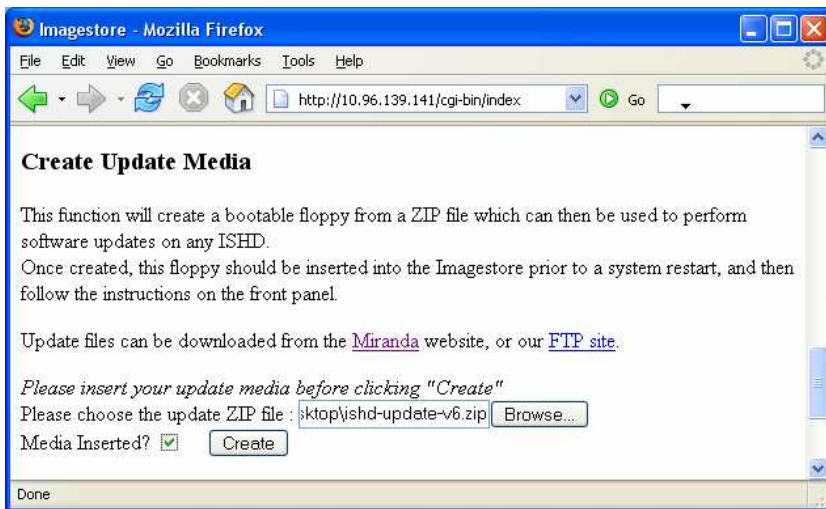
1. Updating from v1.11.x (or earlier) via front panel

- Extract the contents of the ZIP file onto a blank formatted floppy.
- Insert the floppy into the Imagestore HDTV
- From the front panel select the following menu:
Setup » System Setup » Update Software
- When the VFD displays **Media Inserted?** insert the floppy disk and press ENTER.
- When the VFD displays **Media Removed?** remove the floppy disk and press ENTER.
- You now have a bootable floppy disk
- Proceed to the Update Software with CPIO Archive procedure.

2. Updating from v1.13.x (or later) via web page

- Insert a blank floppy into the Imagestore HDTV

- From a networked PC (on the same subnet as the Imagestore), open a web browser and type in the IP address of the Imagestore
- Log into the Imagestore web page with the web administrator password (default “miranda”).
- Go to the ‘Create Update Media’ section of the web page and click ‘Browse’.
- Select the update ZIP file from the ‘Choose File’ dialog
- Tick the ‘Media Inserted’ checkbox and click ‘Create’

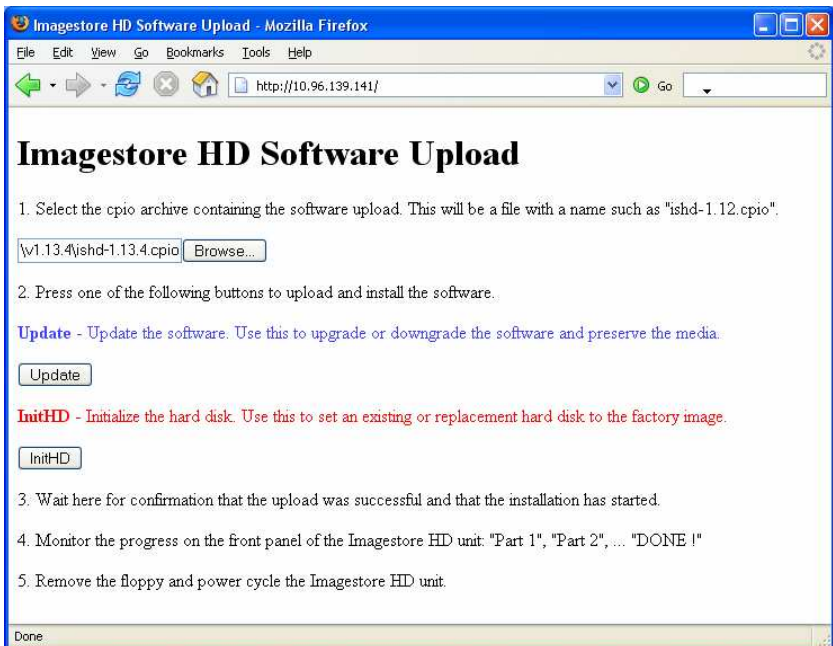


- Monitor the progress on the Imagestore front panel until it shows “DONE! Press Any Key”
- You now have a bootable floppy disk
- Proceed with the Update Software with CPIO Archive procedure.

Update Software with CPIO Archive

The CPIO archive file is uploaded to a networked PC and will be used to upgrade the connected Imagestore HDTV when it is booted off the floppy disk created in the previous section.

- Insert the bootable floppy disk and power up the Imagestore HDTV.
- Wait for the VFD to display its IP Address number
"Visit HTTP Server at XX.XX.XX.XXX".
- From the networked PC that contains the CPIO file open a web browser, Microsoft Explorer or similar, and in the address banner, below the icon tool bar, type in the IP address of the Imagestore to be upgraded. Please note that it may be necessary to clear the browser cache.



- Click on the Browse button and select the CPIO file.
- Click on Update.
- After the software has installed remove the floppy disk and power cycle the Imagestore HDTV.
- When Imagestore restarts the new software will be running.

If a new hard disk has been installed click on the InitHD button.

Warning The 'InitHD' option reformats the hard disk, so all existing media and configurations will be lost. Please ensure that appropriate backups are made before using this option.

Menu Tree

IS-HDTV 1.11.9

Operate

Set Inputs

1/A

Pass SDI

Force Colour Field

2/B

Pass SDI

Force Colour Field

3/Fill-1

Pass SDI

Force Colour Field

4/Key-1

Pass SDI

Force Colour Field

5/Fill-2

Pass SDI

Force Colour Field

6/Key-2

Pass SDI

Force Colour Field

Mix A Input

1/A

2/B

3/Fill-1

4/Key-1

5/Fill-2

6/Key-2

Mix B Input

1/A

2/B

3/Fill-1

4/Key-1

5/Fill-2

6/Key-2

AB Mixer

Cut AB

Cut To A

Cut To B

Fade AB

Fade To A

Fade To B

Transition Type

X-Fade

V-Fade

Mix Rate

V-Fade Colour

Set Cut Mode

Any Field

Field 1 (Def)

Field 2

Set Fade Mode

Any Field (Def)

Field 1

Field 2

Dual 2D DVE

Play Forward

Play Backward

Run Sequence

DVE Mode

Bypass

None (Delay)	Input Operations
A B over DSK 1	Fill-1/Key-1
AB Mixer	Fill-2/Key-2
DSK 1	Unload Input
Keyer Operations	Store Operations
Cut Keyer Up/Down	Load Image
Cut Keyer Up	Set Position
Cut Keyer Down	Set Masking
Fade Keyer Up/Down	Disable
Fade Keyer Up	Setup
Fade Keyer Down	Save Image
Fade Rate	Unload Image
Set Key Parameters	Image Load Mode
Source	Clean Load
Self	Cut Load
Separate	Start Strap
None	Stop Strap
Type	Start Timer
Full	Stop Timer
Linear	Reset Timer
Sense	Play Animation
Normal	Restart Animation
Invert	Stop Animation
Clip, Gain & Trans	Stop Anim Instant
Cut To/From Black	DSK 2
Cut From Black	Keyer Operations
Cut To Black	Cut Keyer Up/Down
Fade To/From Black	Cut Keyer Up
Fade From Black	Cut Keyer Down
Fade To Black	Fade Keyer Up/Down
FTB Rate	Fade Keyer Up

Fade Keyer Down	Save Image
Fade Rate	Unload Image
Set Key Parameters	Image Load Mode
Source	Clean Load
Self	Cut Load
Separate	Start Strap
None	Stop Strap
Type	Start Timer
Full	Stop Timer
Linear	Reset Timer
Sense	Play Animation
Normal	Restart Animation
Invert	Stop Animation
Clip, Gain & Trans	Stop Anim Instant
Cut To/From Black	Preview Select
Cut From Black	Presmaster Preview
Cut To Black	Program o/p
Fade To/From Black	1/A
Fade From Black	2/B
Fade To Black	3/Fill-1
FTB Rate	4/Key-1
Input Operations	5/Fill-2
Fill-1/Key-1	6/Key-2
Fill-2/Key-2	DSK 1 Fill o/p
Unload Input	DSK 2 Fill o/p
Store Operations	AB Mixer o/p
Load Image	DSK 1 o/p
Set Position	DSK 1 Key o/p
Set Masking	DSK 2 Key o/p
Disable	Audio
Setup	Cut A/B

Cut to A	1	2	3	(4)	
Cut to B	(1)	(2)	3	4	
Fade A/B	(1)	2	(3)	4	
Fade to A	(1)	2	3	(4)	
Fade to B	1	(2)	(3)	4	
Toggle Silence	1	(2)	3	(4)	
Fade to Silence	1	2	(3)	(4)	
Fade from Silence	(1)	(2)	(3)	4	
Toggle V0	(1)	(2)	3	(4)	
Voice-over 1	(1)	2	(3)	(4)	
Voice-over 2	1	(2)	(3)	(4)	
Fade Up V0	(1)	(2)	(3)	(4)	
Voice-over 1	1	2	3	4	
Voice-over 2	Channel 2				
Fade Down V0	(1)	2	3	4	
Voice-over 1	1	(2)	3	4	
Voice-over 2	1	2	(3)	4	
Select Preview	1	2	3	(4)	
A Input	(1)	(2)	3	4	
B Input	(1)	2	(3)	4	
A/B Mix	(1)	2	3	(4)	
Voice-over Input	1	(2)	(3)	4	
Program	1	(2)	3	(4)	
Silence	1	2	(3)	(4)	
Test Tone	(1)	(2)	(3)	4	
Input Shuffles	(1)	(2)	3	(4)	
A-Input	(1)	2	(3)	(4)	
Channel 1	1	(2)	(3)	(4)	
(1)	2	3	4	(1)	
1	(2)	3	4	1	
1	2	(3)	4	Channel 3	

```

(1)  2   3   4
  1  (2)  3   4
  1   2  (3)  4
  1   2   3  (4)
(1) (2)  3   4
(1)  2  (3)  4
(1)  2   3  (4)
  1  (2) (3)  4
  1  (2)  3  (4)
  1   2  (3) (4)
(1) (2) (3)  4
(1) (2)  3  (4)
  1  (2) (3) (4)
(1) (2) (3) (4)
  1   2   3   4
Channel 4
(1)  2   3   4
  1  (2)  3   4
  1   2  (3)  4
  1   2   3  (4)
(1) (2)  3   4
(1)  2  (3)  4
(1)  2   3  (4)
  1  (2) (3)  4
  1  (2)  3  (4)
  1   2  (3) (4)
(1) (2) (3)  4
(1) (2)  3  (4)
(1)  2  (3) (4)
  1  (2) (3) (4)

```

```

(1) (2) (3) (4)
  1   2   3   4
Voice-over
Channel 1
(1)  2   3   4
  1  (2)  3   4
  1   2  (3)  4
  1   2   3  (4)
(1) (2)  3   4
(1)  2  (3)  4
(1)  2   3  (4)
  1  (2) (3)  4
  1  (2)  3  (4)
  1   2  (3) (4)
(1) (2) (3)  4
(1) (2)  3  (4)
(1)  2  (3) (4)
  1  (2) (3) (4)
(1) (2) (3) (4)
  1   2   3   4
Channel 2
(1)  2   3   4
  1  (2)  3   4
  1   2  (3)  4
  1   2   3  (4)
(1) (2)  3   4
(1)  2  (3)  4
(1)  2   3  (4)
  1  (2) (3)  4
  1  (2)  3  (4)
  1   2  (3) (4)
(1) (2) (3)  4
(1) (2)  3  (4)
(1)  2  (3) (4)
  1  (2) (3) (4)
(1) (2) (3) (4)
  1   2   3   4
Channel 3
(1)  2   3   4

```

1	(2)	3	4	(1)	2	(3)	4
1	2	(3)	4	(1)	2	3	(4)
1	2	3	(4)	1	(2)	(3)	4
(1)	(2)	3	4	1	(2)	3	(4)
(1)	2	(3)	4	1	2	(3)	(4)
(1)	2	3	(4)	(1)	(2)	(3)	4
1	(2)	(3)	4	(1)	(2)	3	(4)
1	(2)	3	(4)	(1)	2	(3)	(4)
1	2	(3)	(4)	1	(2)	(3)	(4)
(1)	(2)	(3)	4	(1)	(2)	(3)	(4)
(1)	(2)	3	(4)	1	2	3	4
(1)	2	(3)	(4)	Channel 2			
1	(2)	(3)	(4)	(1)	2	3	4
(1)	(2)	(3)	(4)	1	(2)	3	4
1	2	3	4	1	2	(3)	4
Channel 4				1	2	3	(4)
(1)	2	3	4	(1)	(2)	3	4
1	(2)	3	4	(1)	2	(3)	4
1	2	(3)	4	(1)	2	3	(4)
1	2	3	(4)	1	(2)	(3)	4
(1)	(2)	3	4	1	(2)	3	(4)
(1)	2	(3)	4	1	2	(3)	(4)
(1)	2	3	(4)	(1)	(2)	(3)	4
1	(2)	(3)	4	(1)	(2)	3	(4)
1	(2)	3	(4)	(1)	2	(3)	(4)
1	2	(3)	(4)	1	(2)	(3)	(4)
(1)	(2)	(3)	4	(1)	(2)	(3)	(4)
(1)	(2)	3	(4)	1	2	3	4
(1)	2	(3)	(4)	Channel 3			
1	(2)	(3)	(4)	(1)	2	3	4
(1)	(2)	(3)	(4)	1	(2)	3	4
1	2	3	4	1	2	(3)	4
B-Input				1	2	3	(4)
Channel 1				(1)	(2)	3	4
(1)	2	3	4	(1)	2	(3)	4
1	(2)	3	4	(1)	2	3	(4)
1	2	(3)	4	1	(2)	(3)	4
1	2	3	(4)	1	(2)	3	(4)
(1)	(2)	3	4	1	2	(3)	(4)

(1) (2) (3) 4	Store 1
(1) (2) 3 (4)	Easyplay Load
(1) 2 (3) (4)	Easyplay Start
1 (2) (3) (4)	Easyplay Stop
(1) (2) (3) (4)	Easyplay Unload
1 2 3 4	Store 2
Channel 4	Easyplay Load
(1) 2 3 4	Easyplay Start
1 (2) 3 4	Easyplay Stop
1 2 (3) 4	Easyplay Unload
1 2 3 (4)	GPI Output
(1) (2) 3 4	GPI Out 1 On
(1) 2 (3) 4	GPI Out 1 Off
(1) 2 3 (4)	GPI Out 2 On
1 (2) (3) 4	GPI Out 2 Off
1 2 (3) (4)	GPI Out 3 On
(1) 2 (3) (4)	GPI Out 3 Off
1 (2) (3) (4)	GPI Out 4 On
(1) (2) (3) (4)	GPI Out 4 Off
1 2 3 4	GPI Out 5 On
Set Rates	GPI Out 5 Off
Fade A/B	GPI Out 6 On
Fade to Silence	GPI Out 6 Off
Voice-over 1	GPI Out 7 On
Voice-over 2	GPI Out 7 Off
Voice-overs	Miscellaneous
Voice-over 1	GPI Macro Delay
Duck	Emergency To Air
Preset	Emergency From Air
Voice-over 2	EAS On
Duck	EAS Off
Preset	
Easyplay	

Setup	GPI In 2 On
Audio Setup	GPI In 2 Off
Audio Metering	GPI In 3 On
Meters 1 to 4	GPI In 3 Off
Meters 5 to 8	GPI In 4 On
Meters 9 to 12	GPI In 4 Off
Meters 13 to 16	GPI In 5 On
Meters 1 and 2	GPI In 5 Off
Meters 3 and 4	GPI In 6 On
Meters 5 and 6	GPI In 6 Off
Meters 7 and 8	GPI In 7 On
Meters 9 and 10	GPI In 7 Off
Meters 11 and 12	GPI In 8 On
Meters 13 and 14	GPI In 8 Off
Meters 15 and 16	GPI In 9 On
Follow Video	GPI In 9 Off
A/B Mix	GPI Outputs
Fade-To-Black	GPI Out 1 On
Easyplay	GPI Out 1 Off
Follow DSK	GPI Out 2 On
Use Voiceover	GPI Out 2 Off
Select Mixfile	GPI Out 3 On
Delays	GPI Out 3 Off
Delay Bank 1	GPI Out 4 On
Delay Bank 2	GPI Out 4 Off
Delay Bank 3	GPI Out 5 On
Delay Bank 4	GPI Out 5 Off
GPI Setup	GPI Out 6 On
GPI Inputs	GPI Out 6 Off
GPI In 1 On	GPI Out 7 On
GPI In 1 Off	GPI Out 7 Off

Show GPI Inputs	Invert Control
Faders	Enable Pickup
Fader Setup	DSK 1 VPos
AB Mixer	Fader
Fader	Enable Control
Enable Control	Invert Control
Invert Control	Enable Pickup
Enable Pickup	DSK 2 HPos
DSK 1 FTB	Fader
Fader	Enable Control
Enable Control	Invert Control
Invert Control	Enable Pickup
Enable Pickup	DSK 2 VPos
DSK 2 FTB	Fader
Fader	Enable Control
Enable Control	Invert Control
Invert Control	Enable Pickup
Enable Pickup	DSK 1 Clip
DSK 1 Fader	Fader
Fader	Enable Control
Enable Control	Invert Control
Invert Control	Enable Pickup
Enable Pickup	DSK 1 Gain
DSK 2 Fader	Fader
Fader	Enable Control
Enable Control	Invert Control
Invert Control	Enable Pickup
Enable Pickup	DSK 1 Trans
DSK 1 HPos	Fader
Fader	Enable Control
Enable Control	Invert Control

Enable Pickup	Enable Control
DSK 2 Clip	Invert Control
Fader	Enable Pickup
Enable Control	FTS Level
Invert Control	Fader
Enable Pickup	Enable Control
DSK 2 Gain	Invert Control
Fader	Enable Pickup
Enable Control	V01 Pr1 Level
Invert Control	Fader
Enable Pickup	Enable Control
DSK 2 Trans	Invert Control
Fader	Enable Pickup
Enable Control	V01 Pr1 Pset
Invert Control	Fader
Enable Pickup	Enable Control
DSK 1 AnimPos	Invert Control
Fader	Enable Pickup
Enable Control	V01 Pr1 Duck
Invert Control	Fader
Enable Pickup	Enable Control
DSK 2 AnimPos	Invert Control
Fader	Enable Pickup
Enable Control	V01 Pr2 Level
Invert Control	Fader
Enable Pickup	Enable Control
Audio AB Mix	Invert Control
Fader	Enable Pickup
Enable Control	V01 Pr2 Pset
Invert Control	Fader
Enable Pickup	Enable Control
Audio Output	Invert Control
Fader	Enable Pickup
	V0 Input Level

- Fader
 - Enable Control
 - Invert Control
 - Enable Pickup
- A Input Level
 - Fader
 - Enable Control
 - Invert Control
 - Enable Pickup
- B Input Level
 - Fader
 - Enable Control
 - Invert Control
 - Enable Pickup
- VO Input Trim
 - Fader
 - Enable Control
 - Invert Control
 - Enable Pickup
- A Input Trim
 - Fader
 - Enable Control
 - Invert Control
 - Enable Pickup
- B Input Trim
 - Fader
 - Enable Control
 - Invert Control
 - Enable Pickup
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- Video ADC 2
- Video ADC 3
- Video ADC 4
- Video ADC 5
- Video ADC 6
- Video ADC 7

- Video ADC 8
- File Operations
 - Load Image File
 - Erase Image
 - Load Audio File
 - Erase Audio File
 - Configuration Save
 - Configuration Load
 - Diagnostics Save
 - Load System Codes
 - Load Mixfile
 - Erase Mixfile
- System Information
- View Licences
- Set Time-of-Day
- Self Tests
 - DSK 1
 - Image Border
 - Animation Fill
 - DSK 2
 - Image Border
 - Animation Fill
- EAS
 - Severity 1
 - Severity 2
 - Severity 3
- Logging
 - Errors Only
 - Media/Keying
 - Verbose
- System Setup
 - Set Standard

1920x1080/59.94	Automation
1920x1080/50	Presmaster
1280x720/59.94	Easysound
1280x720/50	Intuition
Select Reference	ENDEC Model 1822
PGM wrt HD/REF1	TFT EAS 911T
PGM wrt SD/REF2	RS422 B
PGM wrt 1/A	Baud Rate
Serial Comms Setup	9600
RS232	19200
Baud Rate	38400
9600	57600
19200	115200
38400	Protocol
57600	Automation
115200	Presmaster
Protocol	Easysound
Automation	Intuition
Presmaster	ENDEC Model 1822
Easysound	TFT EAS 911T
Intuition	Timecode Options
ENDEC Model 1822	Timecode Source
TFT EAS 911T	LTC
RS422 A	VITC
Baud Rate	Timecode Status
9600	Intuition Setup
19200	Def Keyer Assign
38400	None
57600	DSK 1
115200	DSK 2
Protocol	Keyer Release Mode

Disabled	Network Mask
Enabled	Gateway Address
Keyer Status	NTP Server
Keyer Status	Time Zone
Fill & Key Input	Console Blanking
Fill-1/Key-1	Restart System
Fill-2/Key-2	Factory Reset
Hostname	Safe Shutdown
IP Address	

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